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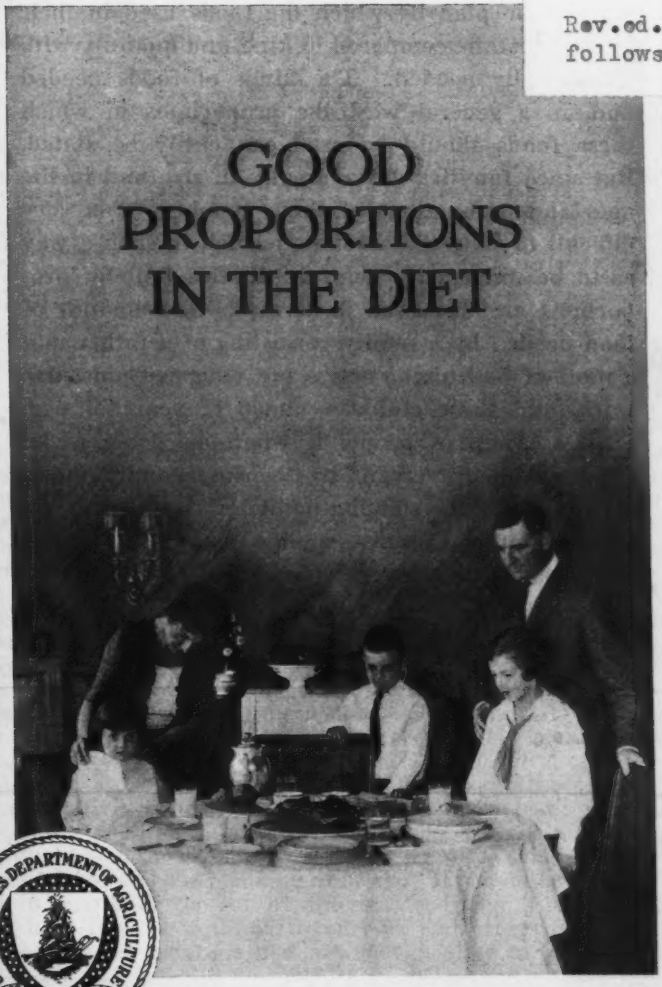
GOOD PROPORTIONS IN THE DIET



HOUSEKEEPERS often feel the need of some simple plan by which the foods used in their families can be compared in kind and quantity with those really needed. The kinds of foods needed and, in a general way, the proportions in which these foods should be used can easily be stated. But since families differ greatly in size and in the ages and occupations of their members it is very difficult to state the amounts needed in such a way as to be universally helpful. In this bulletin proportions are discussed in terms of the amount of food needed by a family consisting of a father and a mother, both doing active but not hard muscular work, and three children under 12 years of age. Such a group of people is what has come to be known as the "average," or "census," family and is here taken as the starting point for considering the needs of other families, smaller as well as larger, and engaged in more active and less active work.

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GOOD PROPORTIONS IN THE DIET.

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KINDS OF FOODS NEEDED.

THE NUMBER of different food materials available in most parts of the United States is very great and is constantly increasing as a result of improved methods of agriculture, the invention of new manufacturing processes, the introduction of foreign food plants, and the cultivation of wild varieties. There is no one of all these many foods that can not be introduced into the diet in such a way as to contribute to its wholesomeness or its attractiveness, but the number of different kinds of food needed is very small. Many food materials, the various cereals, for example, are practically interchangeable in the diet. In fact, most of the common foods may, as suggested in other publications of this department,[1] be classified into five groups according to their composition and uses, namely, (1) vegetables and fruits, (2) meat, milk, and other foods depended on for complete, or efficient, protein, (3) cereals, (4) sugar and sugary foods, and (5) fats and fat foods.

A meal, a day's ration, or a weekly food supply made up from representatives of all these five groups is likely to provide all the substances required to make the diet wholesome and attractive, and for this reason the classification should serve as a guide in the selection of foods and the planning of meals. It should be of some help, too, in comparing the cost of different foods, for it separates foods that have little or nothing in common, and brings together under one head food materials that are enough alike to be compared in

[1] Farmers' Buls. 717, Food for Young Children; 808, How to Select Foods: I. What the Body Needs; 817, How to Select Foods: II. Cereal Foods; 824, How to Select Foods: III. Foods Rich in Protein; and U. S. Dept. Agr. Bul. 975, Food Values: How Foods Meet Body Needs.

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price. For example, to know that a pound of salt codfish costs 10 cents more than a pound of prunes does not make economical meal planning easier. It is helpful, however, to know that one kind of breakfast cereal costs 15 cents, while another that might be substituted for it costs 7 cents, or that a certain amount spent for an inexpensive kind of fruit will bring as good returns in food value as twice that amount spent for some out-of-season variety.

Sample or suggestive weekly food supplies of the five different groups of foods mentioned in the preceding paragraph are shown in Figures 1 to 5. These pictures are taken from a set of eight charts prepared by the Office of Home Economics to show the principles of food selection. The information on the three remaining charts, which is chiefly descriptive and explanatory, is included in the discussions which follow, but it has been expanded by the addition of certain details which for lack of space were omitted from the charts.

The uses of the different kinds of foods are briefly outlined in what follows.

GROUP I. VEGETABLES AND FRUITS.

Vegetables and fruits are depended on for flavor, bulk, mineral substances, particularly iron, and for vitamins, of which at least three kinds, called A, B, and C, are now considered necessary. Spinach stands out among the other foods of this group because of its exceptionally large percentage of iron. The green-leaf vegetables as a class, including lettuce, spinach, kale, dandelion greens, the green tops of turnips, or of beets, or of radishes, and many other vegetables commonly used for salads and greens are especially useful in supplying vitamin A, which is now believed to be necessary for normal growth and for the continued bodily well-being even of adults. Practically all the vegetables and fruits furnish vitamin B, which is, however, so widely distributed among natural food materials that it presents less of a problem to the housekeeper than either of the others. The two chief sources of it are the vegetables and fruits and the so-called whole-grain cereals. Many fruits have been found to supply vitamin C. Lemons, oranges, and tomatoes are considered especially rich in it, and some of the vegetables, notably cabbage and some varieties of turnips, contain comparatively large amounts. White potatoes are also considered an important source of this vitamin in the diet, not because they supply more, pound for pound, than many other foods, but because being mild in flavor and comparatively cheap they are used in larger amounts in most families than any other one vegetable.

It is now believed that the vitamins are to some extent destroyed by drying and also by cooking, particularly in the presence of soda. Probably no two foods are affected to the same extent, and even if the effect on every food were known, the facts would be difficult to keep in mind. In the absence of definite available knowledge on this subject it is wise for the housekeeper to use regularly some uncooked fruits or tomatoes, fresh or canned, and some green-leaf vegetables. The last mentioned should be used either raw or cooked only enough to make them taste good and without unnecessary loss of their juices. Canned and dried vegetables and fruits may all be used for the sake of economy or convenience or to give bulk to the

diet, but never to the exclusion of green-leaf vegetables and fresh fruits. There is no way at present of measuring the exact amount of fruit juices needed for health. It seems probable, however, that it is not large, and the housekeeper who can not afford to serve whole oranges, grapefruit, or fresh tomatoes is probably on the safe side, if she makes a practice of introducing small amounts of orange or lemon juice or canned tomatoes into her bills of fare. An orange cut up with other fruits or a little lemon juice added to sliced bananas, stewed prunes, or other fresh or dried fruits is helpful. There are many desserts and beverages, too, in which small amounts of orange or lemon juice can be used, and many gravies, sauces, and soups that are improved by a little tomato juice. Regularity of supply is probably more important than the use of large amounts.

GROUP II. FOODS DEPENDED ON FOR EFFICIENT PROTEIN.[2]

Representative of the foods that furnish efficient protein are flesh foods, including lean and medium fat meats, poultry, game, fish, and sea foods; eggs; milk; cheese of various kinds; peanuts and soy beans. These foods, though differing much in other respects, are alike in furnishing a kind of protein that will serve to build the protein found in the tissues of the body. Such foods as bacon, salt pork, fat pork sausage, and cream furnish the same kind of protein as the foods of this group, but are too fat to be used as the means of supplying any considerable portion of the needed amount. As a rule, if a food contains two and a half times as much fat as protein, it is listed among the foods of Group V, which are depended on to give richness to the diet rather than to furnish protein.

Some of these foods have special uses. Milk and cheese are very rich in lime, and meat and eggs in iron. Milk from properly fed cows and egg yolks are important sources of vitamin A. In spite of their differences, these foods may be considered interchangeable in the diet of the adult, but in the diet of children none of the ordinary foods can take the place of milk.

GROUP III. CEREAL GRAINS AND THEIR PRODUCTS.[3]

The cereal-grain foods are flour, meal, breakfast foods, bread, rolls, crackers, and all other foods that are made wholly or chiefly from the cereal grains such as wheat, corn, rye, rice, barley, and oats. These cereal foods are depended on to supply protein, starch, and, particularly if they are made from the whole grain, mineral substances and vitamins. Vitamin B is found so near the germ that it is likely to be lost if the germ is removed. The mineral substances are found chiefly in the germ and in the outer coatings of the grain. It is generally agreed that cereal foods keep better if the germ has been removed, and many people prefer white to whole-wheat flour because it makes lighter bread. However, if white bread only is served, care should be taken either to introduce whole-grain cereals into the diet as breakfast foods or in some other way, or to provide an unusually large proportion of vegetables and fruits. (See p. 2.)

[2] Farmers' Bul. 824, How to Select Foods: III. Foods Rich in Protein.
[3] Farmers' Bul. 817, How to Select Foods: II. Cereal Foods.

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GROUP IV. SUGAR AND SUGAR FOODS.

The sugar foods are sugars of different kinds, including granulated, pulverized, lump, brown, and maple; molasses; honey; sirups; candy; sweet chocolate; rich preserves; jellies; jams and marmalades. These foods can be depended on for fuel and flavor, but not for protein, vitamins, and mineral substances. They are therefore not so essential as the other groups. It should be said, however, that sugar at ordinary prices is an economical body fuel and a very economical flavoring material as compared with most extracts and even with spices. If sweets are used in proper proportions to other food materials and are not served in such a way as to destroy the appetite for other foods, they play an important part in the diet.

GROUP V. FATS AND FAT FOODS.

Fats and fat foods include butter, oil, lard, suet, and other table and cooking fats; cream; bacon; salt pork; pork sausage; chocolate; and rich or oily nuts. Most of these foods are prepared by separating fat from natural food materials such as meat, milk, olives, corn, and cotton seed. The advantage of using them in this separated form is that in this way the richness and flavor that they give to the diet are more easily distributed through the other foods. Some of the fat foods, especially butter and cream, furnish vitamin A and for this reason have great advantage over the other foods of the group, particularly when milk, eggs, and green-leaf vegetables can not be obtained in sufficient amounts.

PROPORTIONS OF FOODS NEEDED.

All of the foods mentioned in the preceding paragraphs, and in fact all foods, furnish body fuel or material that can be burned in the body to give it energy and incidentally to keep up its temperature. The fuel supplied by Group I, the vegetables and fruits, is chiefly sugar and starch; that supplied by Group II, namely, milk, meat, eggs, and cheese, chiefly complete, or efficient, protein and fat; that supplied by Group III, the cereals, chiefly protein and starch, the latter being usually six or seven times as much by weight as the former; that supplied by Group IV, the sweets, almost exclusively sugar; and that supplied by Group V, almost exclusively fat. As a rule, the diet will be sufficiently bulky and flavorful and will furnish the right proportions of starch, fat, and sugar for the taste of most people if the vegetables and fruits furnish about 20 per cent of the fuel; the meat, eggs, milk, and similar foods, 25 per cent; the cereal foods, 25 per cent; sweets, 10 per cent; and fats and fat foods, 20 per cent. It will also furnish satisfactory kinds and amounts of protein, mineral substances, and vitamins. These proportions have, therefore, been adopted in making up the sample food supply shown on pages 6 to 14.

The choice of the particular foods from each group to be here illustrated was determined by the facts stated in the paragraphs on the special values of the foods of different groups (pp. 2–4). Many other combinations, more meat and fewer eggs, for example, or more butter and less bacon, or more oatmeal and less flour, would be equally good.

The proportions given in the preceding paragraph are especially adapted for persons who do about an average amount of muscular work. Those who do light muscular work or lead sedentary lives would naturally eat a larger proportion of vegetables, fruits, and efficient-protein foods, and a smaller proportion of cereals, fats, and sweets. On the other hand, those who do hard muscular work seem to need a larger percentage of energy-yielding foods, such as cereals, fats, fat meats, and sweets.

AMOUNTS OF FOODS NEEDED.

It is far easier to state the kinds of foods which together make a satisfactory diet than it is to state the amounts of food needed by an individual or a family. Individuals differ greatly, of course, in age, size, and occupation, and families also differ widely, one from another. It is out of the question, of course, to consider in detail the needs of all families separately and so it has become customary to use a type family for discussion. The family usually chosen for this purpose consists of a man and a woman, both doing moderately active muscular work, and three children, under 12 years of age. Boys and girls over 12 are believed to need as much food as adults. The children in this "average," or "census," family are thought of as having combined ages of not more than 24 years. Such a family serves as the unit in most discussions of food needs and costs of living. The foods shown (Figs. 1 to 5) make a good weekly supply for this unit family.

Such a family needs about 80,000 calories of energy per week, or to use a term which seems more appropriate in speaking of food, 800 one-hundred calorie portions or servings. The food required by this family is about the same in amount, though not necessarily in kind, as that needed by two men and two women all doing light muscular work, or by two men and one woman doing hard muscular work, like that of a farmer and a farm housekeeper. A farm household in which there were two men and one woman all doing hard muscular work, a girl and a boy in their teens, and one younger child would need about twice as much food. Throughout this bulletin the term "adult" should be understood to include boys and girls over 12 years of age, and the term "work" to include also running, jumping, and other activities ordinarily called play.

When the food supply illustrated (Figs. 1 to 5) is used as a guide in the selection of food for a family with children, the first list of efficient-protein foods (p. 8) should be used. When, on the other hand, it is used as a guide to the selection of foods for families of adults only, the second list of efficient-protein foods (p. 9) which contains less milk and more meat, may be used.

TWO WAYS OF STATING AMOUNTS NEEDED.

The amounts of foods needed for a given person or family are usually stated in one of two ways, (1) in terms of such familiar units as pounds, bushels, and dozens; or (2) in terms of units by which energy or the power to do work is measured, that is, in calories and hundred-calorie portions. Rules for estimating the amount of food needed in terms of calories and hundred-calorie portions are

easy to make but troublesome to follow, for foods are not at present bought or sold by calories or hundred-calorie portions, nor are these units used in recipes. On the other hand, exact rules expressed in terms of pounds, dozens, and other familiar units are very difficult to make. The chief reason for this is that food materials differ greatly, not only in the kinds of nutrients they contain, but also in the amount of water and of inedible material such as bone and shell. Even those foods that serve practically the same purpose in the diet are not interchangeable pound for pound. For example, a pound of sugar provides 16 ounces of sugar; a pound of honey, about 12 ounces of sugar; and other sweet foods in common use differ even more. It goes without saying that if a family uses candy, sirup, molasses, honey, and rich preserves purchased as such, it can not safely use so much sugar as it would otherwise; but it is quite impossible to state the total number of pounds of sweets that can be safely used without knowing which ones are to be selected and in what proportions they are to be used.

For these reasons, the amounts of the various kinds of foods that are necessary or desirable are stated in two ways in this bulletin, by weight and by hundred-calorie portions. This is done in the belief that estimates in pounds, dozens, and quarts may be more useful to some housekeepers and that estimates in hundred-calorie portions may, because of their greater definiteness, be more useful to others.

In most cases, the suggested allowances of food from the different groups are given, first in terms of some familiar member of the group; after that suggestions are made for the substitution of other foods that serve about the same purpose. For illustration, allowances of cereal foods are given, first in terms of pounds of dry cereal foods, which, of course, include the flour used in making bread. Many people, however, buy bread instead of having it prepared at home, and an allowance must be made for the nutrients which such bread contains. For this reason the statement is made that a pound of bread usually contains the equivalent of about three-fourths pound of flour and therefore counts as about three-fourths pound of dry cereal in making up the total allowance.

A WEEK'S SUPPLY OF VEGETABLES AND FRUITS FOR THE AVERAGE, OR CENSUS, FAMILY.

The sample weekly supply of vegetables and fruits (Fig. 1) for an average, or census, family represents about 70 pounds fresh weight, or about 160 hundred-calorie portions. It is believed that this amount, if regularly used, will insure the required bulk and mineral substances, even though some of the vegetables and fruits are canned and some dried; and that it will also furnish the required vitamins, provided green-leaf vegetables and fresh fruits are regularly included in small amounts. The separate items in the sample supply are as follows:

	Pounds.
Fresh vegetables and fruits:	
Potatoes, white, ½ peck	7
Potatoes, sweet, ½ peck	7
Asparagus	2
Beets, with greens	2
Carrots	2
Cabbage	2
Squash	2
Turnips	2
Celery	1
Lettuce	1
Onions	2
Tomatoes, 4 medium-sized	1
Rhubarb	1
Bananas, 1 dozen medium-sized	3
Oranges, ½ dozen medium-sized	3
Apples, 8 medium-sized	3
Pineapple (1)	2
Strawberries, 1 quart	1
Total	44
Canned vegetables and fruits:	
Peas, 1 quart	2
String beans, 1 quart	2
Cherries, 1 quart	2
Peaches, 1 quart	2
Total	8
Dried vegetables and fruits:	
Lima beans	2
Raisins	1
Total	3

HOW TO ESTIMATE THE NUMBER OF POUNDS FRESH WEIGHT.

When all the vegetables and fruits used are fresh it is easy to estimate the weight, but when some are dried and some are canned it

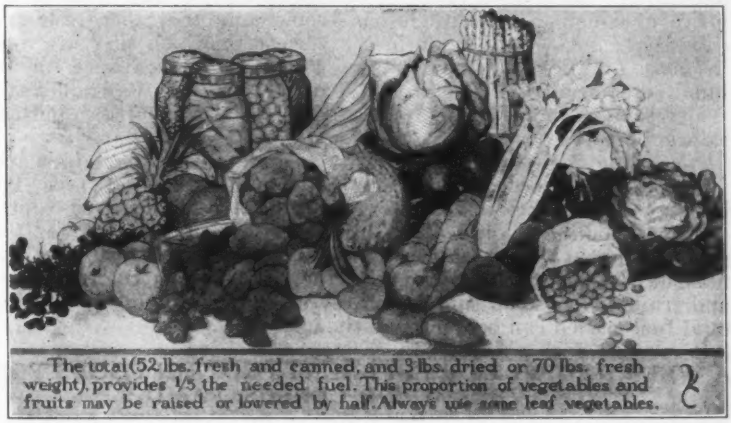
The total (52 lbs. fresh and canned, and 3 lbs. dried or 70 lbs. fresh weight) provides 1/5 the needed fuel. This proportion of vegetables and fruits may be raised or lowered by half. Always use some leaf vegetables.

FIG. 1.—Chart showing vegetables and fruits, fresh, canned, and dried, which together supply about 160 hundred-calorie portions. Any other combination of ordinary vegetables and fruits equivalent to 70 pounds of fresh material would supply about the same amount of body fuel.

may be difficult. Vegetables and fruits lose on the average about five-sixths of their weight when they are dried, the loss being partly due to the removal of inedible portions, but chiefly to the passing off of water. A given number of pounds, dried, therefore, is likely to furnish as much fuel and mineral substances as six times that number of pounds fresh. A given number of pounds of canned vegetables and fruits, on the other hand, seldom corresponds in fuel and mineral substances to more than the same number of pounds fresh or as purchased, i. e., before skins, seeds, pods, outer leaves, and other inedible portions have been removed.

In making up the sample supply of vegetables and fruits, it was estimated that the 8 pounds of canned peas, string beans, cherries, and peaches correspond roughly with 8 pounds of these same foods fresh, and that the 3 pounds of dried lima beans and raisins correspond roughly with 18 pounds of fresh lima beans and grapes. The 44 pounds of fresh vegetables and fruits, the 8 pounds canned, and the 3 pounds dried, together represent, roughly, 70 pounds fresh weight.

This method of estimating the original or fresh weight of the vegetables and fruits used in the course of a week is recommended to the housekeeper who wishes to keep her food supply up to the standard. Dried and canned vegetables and fruits can never wholly take the place of fresh vegetables and fruits; but if only a small part of the 70 pounds can be obtained in fresh form, it is better to make up the remainder in the form of dried and canned products than to reduce the total.

HOW TO ESTIMATE THE ENERGY VALUE OF THE VEGETABLES AND FRUITS.

The fuel or energy values per pound of the different vegetables and fruits differ considerably, but from dietary studies made in the Office of Home Economics it has been found that the fresh and canned vegetables and fruits in the variety in which they are used in most families seldom represent less than 225 calories, or 2¼ hundred-calorie portions per pound, and that the dry vegetables and fruits seldom represent less than 1,350 calories, or 13½ hundred-calorie portions per pound.

According to these figures the fresh and canned vegetables and fruits in the sample weekly supply should furnish at least 117 hundred-calorie portions and the dried at least 40½ hundred-calorie portions, making a total of 157½ hundred-calorie portions for the group, or about 20 per cent of the total 800 hundred-calorie portions needed. In this way the amount of fuel furnished by the vegetables and fruits in any food supply and the proportion of this fuel to the total fuel needed can be quickly estimated.

A WEEK'S SUPPLY OF EFFICIENT-PROTEIN FOODS FOR THE AVERAGE, OR CENSUS, FAMILY.

A sample weekly food supply of meat, eggs, milk, and other foods depended on for efficient protein, such as would be needed by the typical family, is shown in Figure 2. The supply includes 14 quarts of milk and 14 pounds of flesh foods, cheese, eggs, and peanuts, or about 200 hundred-calorie portions. It is believed that if this amount of food of this group is used, the proportion of efficient protein in the diet will be about right. The separate items are as follows:

	Quarts.
Milk	14

	Pounds.
Beef, fresh	4
Beef, dried	1
Fowl	3
Fish, fresh, lean	2
Fish, canned	1
Cheese	1
Eggs, 1 dozen	1½
Peanuts, 1 quart	½
Total	14

Children need more milk than adults, and the number of quarts that should be used depends on the family. The 14 quarts shown in Figure 2 is believed to be as little as is wise for a family of two adults and three children. For this family 3 quarts a day, or 21 quarts a week, would be a better allowance, and would furnish daily three glasses for each child and a small quantity for general use. Since the added quart of milk would be chiefly for children, it would hardly be practicable to reduce the other foods much. A family of adults would probably use less milk in proportion to meat, cheese, and eggs. For three adults doing hard work or four doing light work

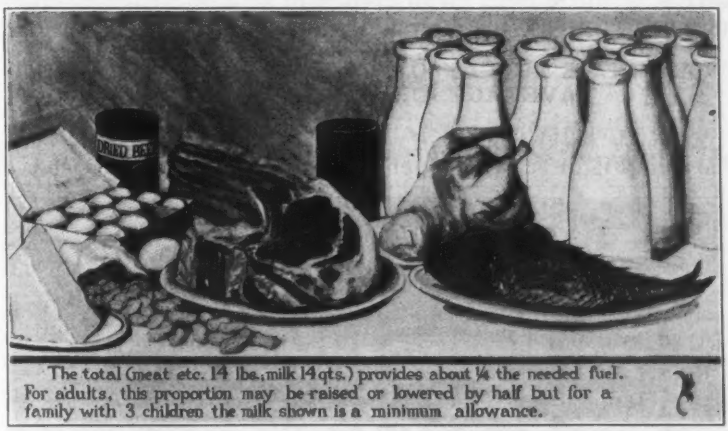
The total (meat etc. 14 lbs., milk 14 qts.) provides about ¼ the needed fuel.
For adults, this proportion may be raised or lowered by half but for a family with 3 children the milk shown is a minimum allowance.

FIG. 2.—Chart showing efficient-protein foods which together supply 200 hundred-calorie portions. Any other combination, consisting of 14 quarts of milk and 14 pounds of flesh foods, cheese, and eggs, would furnish about the same amount of body fuel.

(see p. 5) 1 quart of milk and 2½ to 3 pounds of the other foods would be a more usual daily allowance. For either of these two families the following may be used as a guide to the amount of efficient-protein foods used weekly:

	Quarts.
Milk	7
	Pounds.
Meats	10
Fowl	3
Fish, fresh, lean	2
	Pounds.
Meat or fish, dried	1
Meat or fish, canned	1
Cheese	¾
Eggs, 1 dozen	1½
Peanuts, 1 quart	½

HOW TO ESTIMATE THE NUMBER OF HUNDRED-CALORIE PORTIONS OF EFFICIENT-PROTEIN FOODS.

The number of hundred-calorie portions that can be counted upon from the foods of the efficient-protein group is not easy to state except in the case of milk. A quart of whole milk supplies about 6 hundred-calorie portions and a quart of skim milk or buttermilk about 3 hundred-calorie portions. The 14 quarts of whole milk shown in Figure 2 represent, therefore, about 84 hundred-calorie portions. It has been found (see p. 18) that the meat exclusive of very fat products like bacon and salt pork, eggs, and similar foods used in most families average at least 8 hundred-calorie portions per pound.

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The foods shown in Figure 2, some of which are fat and some lean, were chosen to correspond with this average and to supply about 112 hundred-calorie portions. It is true that the flesh foods, eggs, and cheese, used in the course of a week in a given family may represent less fuel than this per pound. They certainly will if they consist chiefly of fresh fish, chicken, or eggs, all of which are below the average in energy value. On the other hand, they will represent more than 8 hundred-calorie portions per pound if they consist chiefly of pork, lamb, cheese, or peanut butter, all of which are above the average. During the course of a month or a year, however, it is safe to count on an average of at least 8 hundred-calorie portions per pound from foods of this kind.

A WEEK'S SUPPLY OF CEREAL FOODS FOR THE AVERAGE, OR CENSUS, FAMILY.

A sample weekly supply of cereal foods for the average family is shown in Figure 3. This supply corresponds to about 12½ pounds of

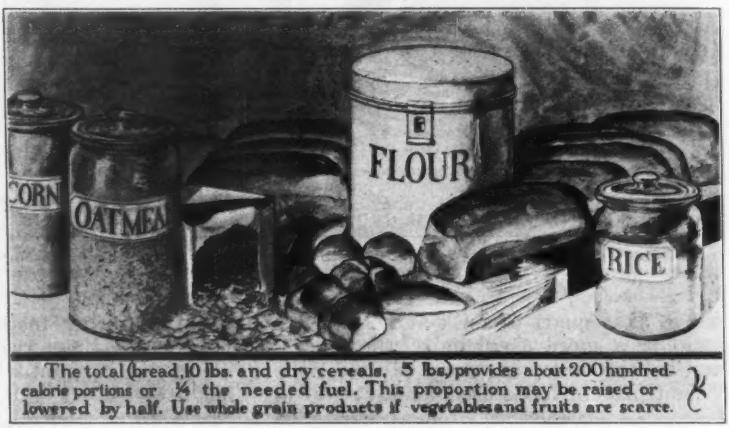
CORN
OATMEAL
FLOUR
RICE
The total (bread, 10 lbs. and dry cereals, 5 lbs.) provides about 200 hundred-calorie portions or ¼ the needed fuel. This proportion may be raised or lowered by half. Use whole grain products if vegetables and fruits are scarce.

FIG. 3.—Chart showing bread and other cereal foods which together supply about 200 hundred-calorie portions. Any other combination of cereal foods equivalent to 12½ pounds of dry cereal would furnish about the same amount of body fuel.

dry cereals, such as flour, meal, and ready-to-eat breakfast foods, and supplies about 200 hundred-calorie portions. It is believed that if this amount of cereal foods is used regularly in addition to the vegetables, fruits, milk, meat, and other foods illustrated, the diet will be sure to supply enough protein and the proportion of starch to sugar and fat will make it palatable. Many well-to-do families, however, prefer less cereals and more meat. The separate items are as follows:

	Pounds.
Flour, 10 cups	2½
Rolled oats, 2½ to 3 cups	½
Corn meal, 1½ cups	½
Rice, 1 cup	½
Macaroni	½
Ready-to-eat breakfast cereal, 5 to 6 cups	½
Total	5
Bread and rolls	10

HOW TO ESTIMATE THE TOTAL AMOUNT OF CEREALS USED.

Some families make their own bread, some buy bread, and some buy part and make part. Every pound of bread contains approximately three-fourths of a pound of flour. The housekeeper can, therefore, make a rough estimate of the amount of cereal food she uses by adding three-fourths of the weight of bread she buys to the weight of the flour, oatmeal, and other dry cereal food she used in cooking. For example, in the foods illustrated in Figure 3 there are 10 pounds of bread and rolls representing three-fourths as much flour, or about 7½ pounds. This added to the 5 pounds of dry cereals makes a total of 12½ pounds.

HOW TO ESTIMATE THE NUMBER OF HUNDRED-CALORIE PORTIONS IN CEREAL FOODS.

It is a comparatively easy matter to estimate the number of hundred-calorie portions that are to be obtained from cereal foods. The

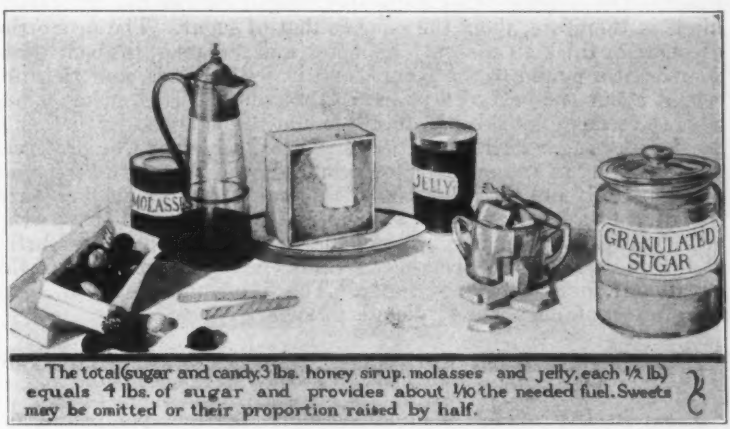
MOLASSES
JELLY
GRANULATED SUGAR
The total (sugar and candy, 3 lbs. honey sirup, molasses and jelly, each ½ lb.) equals 4 lbs. of sugar and provides about ⅒ the needed fuel. Sweets may be omitted or their proportion raised by half.

FIG. 4.—Chart showing sugar and other sweet foods which together supply about 80 hundred-calorie portions. Any other combination of such foods which furnishes about 4½ pounds of sugar would furnish about the same amount of body fuel.

dry cereals, including the various kinds of flours, meals, and breakfast foods average about 16 hundred-calorie portions per pound, and no one kind differs much one way or the other from the average. Bread and rolls average about 12 hundred-calorie portions per pound.

The dry cereals shown in Figure 3 may then be expected to furnish 5×16 hundred-calorie portions and the bread 10×12 hundred-calorie portions, making a total of 200 hundred-calorie portions. In this way the fuel value of any combination of cereal foods can be quickly ascertained.

A WEEK'S SUPPLY OF SWEETS FOR THE AVERAGE, OR CENSUS, FAMILY.

A sample weekly supply of sweets for an average, or census, family is shown in Figure 4. These sweets represent about 4½ pounds of

sugar, or about 80 hundred-calorie portions. It is believed that this amount of sweets if used regularly will contribute to the attractiveness of the diet without interfering with the use of the required amount of protein, mineral substances, and vitamins. The separate items are as follows:

	Pounds.		Pounds.
Sugar, granulated, 4 cups	2	Sirup, about ⅔ cup	½
Sugar, loaf	¼	Molasses, about ⅔ cup	½
Candy	¾	Jelly	½
Honey, about ⅔ cup	½		

HOW TO ESTIMATE THE AMOUNT OF SUGAR IN SWEETS.

Granulated, lump, pulverized, and brown sugars, though differing in texture or flavor, are practically alike in composition; they contain little or nothing but sugar. A pound of candy may be considered the equivalent in fuel value of a pound of sugar. Water, which has no fuel value, is used in making candy, to be sure, but so, too, are chocolate and nut meats, which have higher fuel values than sugar. The average fuel value per pound of candies of various kinds is, therefore, about the same as that of sugar. The proportion of sugar in thick sirups, such as honey and molasses, is about three-fourths of a pound to the pound, and in jellies, jams, and rich preserves, about one-half of a pound to the pound. This makes it possible to estimate quickly the total amount of sugar used, whether in the form of sugar itself or in the form of candy, sirups, or preserves. For example, in the sweets shown in Figure 4 there are 2¼ pounds of sugar itself and three-fourths of a pound of candy, together corresponding to a total of about 3 pounds of sugar. The honey, sirup, and molasses together weigh 1½ pounds, of which about three-fourths, or 18 ounces, is sugar. The jelly weighs one-half pound, and of this about half, or 4 ounces, is sugar. The 5 pounds of sweets listed therefore contains about 4½ pounds of sugar.

HOW TO ESTIMATE THE NUMBER OF HUNDRED-CALORIE PORTIONS IN THE SWEETS.

Sugar itself provides 18 hundred-calorie portions per pound and average candy about the same number. Thick sirups provide about 13½ hundred-calorie portions, and jelly, jam, marmalade, and rich preserves about 9 hundred-calorie portions per pound. With these figures in mind, it is easy to estimate the number of hundred-calorie portions to be obtained from the sweets even when these foods are used in great variety. Of the sweets in Figure 4, for example, the 3 pounds of sugar and candy may be expected to furnish about 54 hundred-calorie portions, the 1½ pounds of thick sirups (honey, sirup, and molasses) about 20¼ hundred-calorie portions, and the one-half pound of jelly about 4½ hundred-calorie portions. This makes a total of nearly 80 hundred-calorie portions, or about one-tenth of the fuel needed weekly.

A WEEK'S SUPPLY OF FATS AND FAT FOODS FOR THE AVERAGE, OR CENSUS, FAMILY.

A sample weekly food supply of fats and fat foods for the typical family is shown in Figure 5. These foods correspond to about 4

pounds of pure fat and represent about 160 hundred-calorie portions. It is believed that this amount of fat, in addition to that supplied by the meat, milk, and similar foods suggested, will make the diet sufficiently rich to taste good. It is believed, also, that the amount of butter, cream, and suet shown will, if used in connection with the milk and green vegetables elsewhere recommended, be enough to keep up the supply of vitamin A. The separate items are as follows:

	Pound.		Pounds.		Pounds.
Oil, ¼ cup	¼	Butter	2	Cream, 1 pint	1
Shortening fat, 1 cup	½	Bacon	1	Nuts in shell	1
Suet	¼				
Total	1	Total	3	Total	2

HOW TO ESTIMATE THE AMOUNT OF FAT IN THE FATS AND FAT FOODS.

Oil, suet, lard, and drippings may be considered to be all fat; butter, bacon, salt pork, chocolate, and fat nut meats may be considered to be at least three-fourths fat; and cream and nuts in the

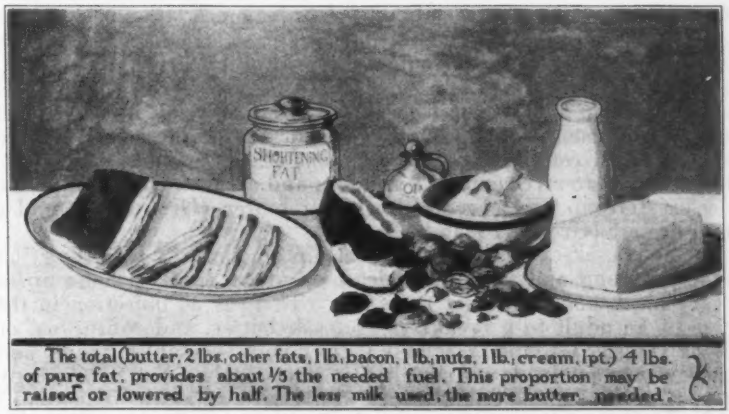
SHORTENING
FAT
OIL
The total (butter, 2 lbs., other fats, 1 lb., bacon, 1 lb., nuts, 1 lb., cream, 1 pt.) 4 lbs. of pure fat, provides about ⅓ the needed fuel. This proportion may be raised or lowered by half. The less milk used, the more butter needed.

FIG. 5.—Chart showing fats and fat foods which together supply about 160 hundred-calorie portions. Any other combination of such foods equivalent to about 4 pounds of fat would furnish about the same amount of body fuel.

shell may be considered to be one-fourth fat. With these figures in mind it is possible to estimate the amount of fat in the fat foods, whether these foods are chiefly butter or chiefly cream, oils, nuts, or other foods commonly used to enrich the diet. For instance, the pound of oil, shortening fat, and suet, shown in Figure 5, may be considered all fat. The fat in butter and bacon may be considered to be about 2¼ pounds, or three-fourths of their total weight, while the fat in the cream and nuts in the shell may be considered to be 8 ounces, or one-fourth of their total weight. This makes a total of nearly 4 pounds of fat in all.

HOW TO ESTIMATE THE NUMBER OF HUNDRED-CALORIE PORTIONS IN THE FAT AND FAT FOODS.

Pure fat has a fuel value of about 4,000 calories per pound. Butter furnishes about 34 hundred-calorie portions per pound. Bacon, salt

pork, chocolate, and fat nut meats average about 28 hundred-calorie portions, and cream and nuts in the shell about 10 hundred-calorie portions per pound. With these figures in mind it is possible to estimate quickly the number of hundred-calorie portions of fat and fat foods shown in the sample weekly supply as not far from 160 hundred-calorie portions, and the same method can be used in estimating the fuel value of any other list of fats and fat foods.

MEAL PLANNING.

Up to this point, emphasis has been laid on the kinds and proportions of foods in the weekly supply, and no mention has been made of the make-up of the separate meals. This was done in the belief that a balanced food supply insures a balanced diet. The common way of using such foods as those illustrated is by serving one or more foods from each of the five groups at each meal. Many people eat for breakfast: Fruit (Group I); either a cereal with milk, or an egg, or warmed-over meat or fish on toast or with bread (Groups II and III); butter or bacon (Group V); and sugar, marmalade, or both (Group IV). The usual bill of fare for lunch or supper includes meat, sliced cold or warmed over, or cheese, or eggs in some form, or a milk soup or chowder (Group II); bread or crackers (Group III); butter or oil (Group V); a green salad or sliced fruit (Group I); and sugar or a sweet of some other kind (Group IV). Dinner usually consists of meat, poultry, fish, or one of the so-called meat substitutes (Group II); potatoes and one other vegetable (Group I); bread and butter (Groups III and V); and a sweet of some kind for dessert (Group IV); or bread without butter (Group III) and a rich dessert (Groups IV and V).

Some housekeepers like to do a certain amount of "balancing" as they go along and to serve at least one food from each group at every meal, but this is not necessary. There is no objection in the case of an adult to a breakfast of toast, butter, and coffee, tea, or cocoa (chiefly Groups III and V), if enough vegetables, fruits, and efficient-protein foods are supplied at later meals. Nor is there any reason to think that serious injury would be done by the omission of any one group of food for a whole day, or even longer. For this reason, emphasis has been placed chiefly on the importance of keeping account of the foods served in the course of a week rather than of those in each meal.

Another point to be remembered is that meals are not necessarily well balanced, even if they contain representatives of all the food groups, for much depends on the proportions in which these foods are used. A dinner which includes meat, and also a dessert made of milk and eggs, such as custard or ice cream, is likely to supply far more of the efficient-protein foods than needed, an important matter since these are among the most expensive food materials. Nor is it possible to judge from the dishes served whether a meal is balanced or not. For example, a meal that includes no meat course, but has in its place only bread and butter with vegetables or fruits may be well-balanced if the dessert is such a dish as old-fashioned rice pudding which has milk for its chief ingredient. If the weekly food supply is satisfactory the exact make-up of the separate meals is not

important, though the habit of providing all the required kinds of foods regularly is helpful and likely to save time and thought.

SUGGESTED BILLS OF FARE.

A bill of fare for a week that could be made from the food supply illustrated in Figures 1 to 5, is given below. It should be remembered that this food supply was planned for the average, or census, family and that it should perhaps be modified by increasing or decreasing the amount of milk according to the number of children and adults in the family. When more milk is provided for the young children this would partially take the place of the meat, fish, cheese, or egg dishes. It should be kept in mind also that the food materials in the suggested bill of fare are merely representative of the many kinds belonging to each group of foods. Thus, for example, pork, lamb, mutton, and veal might be substituted for chicken, fish, and beef, and many other fruits and vegetables might replace those enumerated with no loss of nutritive value and with the advantage of adding variety to the diet.

SUNDAY.

BREAKFAST.	DINNER.	LUNCH OR SUPPER.
Breakfast cereal with raisins and milk; eggs; bread or toast with butter.	Chicken,* stuffed and roasted or fricasseed and served on toast or with rice; sweet potatoes; asparagus; jelly; bread; ice cream.	Peanut sandwiches with lettuce salad; or bread, milk, and butter for children; candy.

MONDAY.

BREAKFAST.	DINNER.	LUNCH OR SUPPER.
Baked apples; breakfast cereal with milk; bacon; bread or toast with butter.	Scalloped canned fish; potatoes; sliced tomatoes; squash: bread and butter; strawberry shortcake.	Creamed dried beef with baked potatoes; bread and butter; sliced oranges with coconut.

TUESDAY.

BREAKFAST.	DINNER.	LUNCH OR SUPPER.
Sliced pineapple and bananas; breakfast cereal with milk; bacon; bread or toast with butter.	Curried lima beans with warmed-over chicken; macaroni and cheese*; cold slaw; bread; apple pudding, baked or steamed.	Creamed fish on toast or boiled rice; bread and butter; raisin tarts.

WEDNESDAY.

BREAKFAST.	DINNER.	LUNCH OR SUPPER.
Canned cherries; breakfast cereal with milk; eggs; bread or toast with butter.	Roast beef; boiled onions; potatoes; bread; peach pie.	Lime-bean chowder; crackers or bread and butter; celery; boiled rice with honey.

THURSDAY.

BREAKFAST.	DINNER.	LUNCH OR SUPPER.
Bananas; breakfast cereal with milk; eggs; bread or toast with butter.	Meat cakes*; creamed potatoes; string beans; bread; baked bananas.	Cheese sandwiches or scalloped cheese and rice;* lettuce; bread and butter; wheat cakes with sirup.

* Bread and milk instead of this for young children.

FRIDAY.

BREAKFAST.	DINNER.	LUNCH OR SUPPER.
Stewed rhubarb; breakfast cereal with milk; corn griddle cakes with butter.	Fish, stuffed and baked;* sweet potatoes; beets with greens; bread; suet pudding with raisins.	Cream of pea soup; scalloped sweet potatoes; celery; bread or biscuits and butter; canned cherries.

SATURDAY.

BREAKFAST.	DINNER.	LUNCH OR SUPPER.
Canned peaches; breakfast cereal with milk; chipped beef on toast; bread or toast with butter.	Beef stew * or soup with turnips, carrots, onions, and dumplings; bread; orange custard with nut cookies.	Boiled potatoes and milk gravy made with bacon fat; cold slaw; bread and butter; candy.

* Bread and milk instead of this for young children.

COMPARING ONE'S OWN FAMILY WITH THE AVERAGE, OR CENSUS, FAMILY.

The statement is made (p. 5) that the average, or census, family needs about 800 hundred-calorie portions a week, or about 114 a day. The number of hundred-calorie portions needed by any family can be estimated roughly by reference to Table 1, and from such an estimate the allowances for any given family or household may be compared with the allowances given in this bulletin. For illustration, in the case of the farm household suggested on page 5, each of the two men at hard muscular work would require about 300 hundred-calorie portions a week, the woman at similar work about 235, the two children in their teens about 535, and the younger child perhaps 140, making 1,510 hundred-calorie portions for the whole family. All of the allowances suggested in this bulletin, therefore, would need to be nearly doubled. The medium cereal allowance (see p. 10) would then be about 24 pounds a week instead of 12¼, the fat allowance 8 instead of 4 pounds, and so on through the groups.

TABLE 1.—*Approximate number of hundred-calorie portions to be allowed for different individuals.*

Individual.	Per day.	Per week.
The average person over 12 years of age	27	200
A man or boy using large amount of muscular energy in work or play	40	280
A man or boy using moderate amount of muscular energy in work or play	33	235
A man or boy using little or no muscular energy in work or play	27	200
A woman or girl using large amount of muscular energy in work or play	33	235
A woman or girl using moderate amount of muscular energy in work or play	27	200
A woman or girl using little or no muscular energy in work or play	22	150
A boy or girl between 10 and 12 years of age	20	140
A boy or girl between 6 and 9 years of age	17	120
A boy or girl between 1 and 5 years of age	14	100
An infant under 1 year of age	6	40

COMPUTING THE COST OF A WEEK'S FOOD SUPPLY.

The amounts of foods given in this bulletin, namely, 70 pounds of vegetables and fruits, fresh weight, or 160 hundred-calorie portions of vegetables and fruits, fresh, canned, and dried; 14 quarts, or 84 hundred-calorie portions of milk; 14 pounds, or 112 hundred-

calorie portions, of flesh foods, eggs, and cheese; 12½ pounds of cereal, dry weight, or 200 hundred-calorie portions of cereal foods; 4½ pounds of sugar, or 80 hundred-calorie portions of sweets; and 4 pounds of fat, or 160 hundred-calorie portions of fat foods may be depended on to supply enough fuel for the average, or census, family per week and to make an attractive diet. For economy's sake, however, it is often necessary to take into account the separate as well as the average values of the foods of the different groups. The fuel values in terms of approximate hundred-calorie portions of many of the common food materials as purchased are given in Table 2:

TABLE 2.—*Approximate number of hundred-calorie portions in common food materials as purchased.*

GROUP I. VEGETABLES AND FRUITS.

Materials.	Number of hundred-calorie portions.
Vegetables, fresh:	
Asparagus	1 per pound.
Beans, lima, shelled	5½ per pound.
Do	7 per quart.
Beans, string	1¾ per pound.
Do	1¾ per quart.
Beets	1½ per pound.
Cabbage	1 per pound.
Do	3 per medium-sized head (3 pounds).
Carrots	1½ per pound.
Cauliflower	1½ per pound.
Do	2 per medium-sized head (1½ pounds).
Celery	¾ per pound.
Corn	1¾ per pound.
Do	11 per dozen medium-sized ears.
Cowpeas, shelled	6 per pound.
Cucumbers	¾ per pound.
Do	¼ per medium-sized cucumber.
Lettuce	¾ per pound.
Do	¼ per medium-sized head.
Mushrooms	2 per pound.
Okra	1½ per pound.
Onions	2 per pound.
Parsnips	2½ per pound.
Peas	2½ per pound.
Do	20 per peck.
Potatoes, Irish	3 per pound.
Do	45 per peck.
Potatoes, sweet	4½ per pound.
Do	63 per peck.
Pumpkin	½ per pound.
Radishes	1 per pound.
Rhubarb	¾ per pound.
Spinach	1 per pound.
Do	5 per peck.
Squash	1 per pound.
Tomatoes	1 per pound.
Turnips	1¼ per pound.
Turnip tops	2 per pound.
Vegetables, canned:	
Beans, string	1 per pound.
Do	1¼ per No. 2 can.
Beans, baked	6 per pound.
Do	7 per No. 2 can.
Corn	4½ per pound.
Do	6 per No. 2 can.
Tomatoes	1 per pound.
Vegetables, canned—Continued.	
Tomatoes	1½ per No. 2 can.
Peas	2½ per pound.
Do	3 per No. 2 can.
Vegetables, dried:	
Beans	15½ per pound.
Cowpeas	15½ per pound.
Peas	16 per pound.
Fruits, fresh:	
Apples	2 per pound.
Do	24 per peck.
Bananas	3 per pound.
Do	11 per dozen medium-sized.
Cherries	3½ per pound or per quart.
Cranberries	2 per pound or per quart.
Currants	2½ per pound or per quart.
Grapes	3½ per pound or per quart.
Huckleberries	3½ per pound or per quart.
Lemons	1½ per pound.
Do	4½ per dozen medium-sized.
Muskmelon	1 per pound or 1 per medium-sized.
Oranges	1¾ per pound or 10 per dozen medium-sized.
Peaches	1½ per pound, 6 per dozen.
Pears	2½ per pound.
Plums	3¼ per pound.
Raspberries	3 per pound or per quart.
Strawberries	1¼ per pound or per quart.
Watermelon	½ per pound.
Fruits, canned:	
Cherries	4 per pound.
Do	5 per No. 2 can.
Peaches	2 per pound.
Do	2½ per No. 2 can.
Pears	3½ per pound.
Do	4½ per No. 2 can.
Pineapples	7 per pound.
Do	4½ per No. 2 can.
Fruits, dried:	
Apples	13 per pound.
Dates	14 per pound.
Figs	14½ per pound.
Prunes	11½ per pound.
Raisins	14 per pound.
Fruits, miscellaneous:	
Olives, green or ripe	10 per pound or per pint.

TABLE 2.—*Approximate number of hundred-calorie portions in common food materials as purchased*—Continued.

GROUP II. FOODS DEPENDED UPON FOR EFFICIENT PROTEIN.

Materials.	Number of hundred-calorie portions.	Materials.	Number of hundred-calorie portions.
Dairy products:		Fish, fresh:	
Milk, whole	3 per pound or 6 per quart.	Bass	2 per pound.
Milk, skim	3 per quart.	Codfish	1½ per pound.
Buttermilk	3 per quart.	Halibut, steak	4½ per pound.
Milk, condensed, unsweetened	8 per pound.	Mackerel, Spanish	3½ per pound.
Milk, condensed, sweetened	15 per pound.	Perch	2 per pound.
Milk, dried, whole	23 per pound.	Salmon	6 per pound.
Milk, dried, skim	16 per pound.	Shad	3½ per pound.
Cheese, ordinary	10½ per pound.	Shad roe	6 per pound.
Cheese, cottage	5 per pound.	Smelts	2½ per pound.
Eggs	9 per dozen.	Trout, brook	2½ per pound.
Meats:		Fish, smoked or salted:	
Beef, average	10 per pound.	Cod, salt (boneless)	5 per pound.
Beef, chuck	7½ per pound.	Halibut, smoked	9 per pound.
Beef, corned	12½ per pound.	Herring, smoked	7½ per pound.
Beef liver	5½ per pound.	Mackerel, salt	10 per pound.
Beef ribs	11 per pound.	Fish, canned:	
Beef, round	7½ per pound.	Salmon	6½ per pound.
Beef, sirloin	9½ per pound.	Sardines	9 per pound.
Beef tongue	5½ per pound.	Tuna fish	9½ per pound.
Lamb, average	10 per pound.	Shellfish, fresh:	
Lamb, leg	11 per pound.	Lobster	1½ per pound.
Lamb, loin	13 per pound.	Oysters	2 per pound.
Mutton, average	12 per pound	Do	4 per quart.
Pork, whole side, average	22 per pound.	Scallops	3½ per pound.
Pork, except items in V, average	13 per pound.	Shellfish, canned:	
Veal, average	5½ per pound.	Lobster	4 per pound.
Poultry:		Shrimps	5 per pound.
Chicken, broilers	3 per pound.	Legumes:	
Fowl	7½ per pound.	Peanuts, unshelled	19 per pound.
		Peanuts, shelled	11 per quart.
		Do	25 per pound.
		Peanut butter	27½ per pound.
		Soy beans, dried	20 per pound.

GROUP III. CEREAL FOODS.

Bread	12 per pound.	Macaroni	16 per pound.
Do	9 per loaf, 16 oz. dough, 12–14 oz. baked.	Oatmeal	18 per pound.
		Rice	16 per pound.
Cereals, flaked	15 per pound.	Rolls	12 per pound.
Corn meal	16 per pound.	Rolls, 2-ounce size	18 per dozen.
Crackers	19 per pound.	Tapioca	16 per pound.
Flour, wheat	16 per pound.	Wheat, shredded	16½ per pound.
Flour, buckwheat	16 per pound.		

GROUP IV. SUGARS AND SUGARY FOODS.

Candy, average	17 per pound.	Sirup, corn	54 per quart.
Honey	15 per pound.	Sirup, maple	49 per quart.
Do	55 per quart.	Sugar, granulated	18 per pound.
Molasses	13 per pound.	Sugar, maple	15 per pound.
Do	50 per quart.	Chocolate, milk	22½ per pound.
Sirup, corn	14½ per pound.	Chocolate, sweet	22 per pound.

GROUP V. FATS AND FAT FOODS.

Fats, table and cooking:		Nuts—Continued.	
Butter	34 per pound.	Butternuts, unshelled	4 per pound.
Lard	41 per pound.	Butternuts, shelled	32 per pound.
Oil	41 per pound.	Coconut in shell, without milk	14 per pound.
Suet	34 per pound.	Hickory nuts, unshelled	12 per pound.
Cream, 18 per cent	9 per pound or per pint.	Hickory nuts, shelled	33 per pound.
Cream, 40 per cent	17 per pound or per pint.	Pecans, unshelled	17 per pound.
Fat meats:		Pecans, shelled	33 per pound.
Bacon	26 per pound.	Walnuts, California, unshelled	8½ per pound.
Pork, salt	28½ per pound.	Walnuts, California, shelled	32 per pound.
Pork sausage	21 per pound.	Chocolate	28 per pound.
Nuts:			
Almonds, unshelled	16 per pound.		
Almonds, shelled	29 per pound.		
Brazil nuts, unshelled	16 per pound.		
Brazil nuts, shelled	32 per pound.		

From the figures in the table and from the market prices of foods, the cost of a hundred-calorie portion of any food can be determined, and the cost of the various foods that serve the same purposes in the diet can be compared. Take, for example, ordinary American cheese, which provides nearly 20 hundred-calorie portions per pound, and cottage cheese, which provides 5 hundred-calorie portions per pound. When the American cheese sells for 40 cents a pound it costs about 2 cents per hundred-calorie portion, and cottage cheese would have to sell for 10 cents a pound to be equally cheap as a source of energy. Bread, which furnishes 12 hundred-calorie portions per pound, costs about 1 cent per hundred-calorie portion when it sells for 12 cents a pound. To provide energy as cheaply, ready-to-eat breakfast cereals, which yield about 16 hundred-calorie portions per pound, would have to sell for 16 cents a pound, or for 5 cents for an ordinary 5-ounce package. It is often possible, too, to save money by changing the proportions of the foods from the average groups, and such changes are safe within certain limits. With the exception of the milk for children, the foods of any group may safely be increased or decreased by 50 per cent, and sweets may be omitted altogether, if desired.

Under most conditions of living the cheapest foods are the lower-priced cereal preparations, namely, flour, meal, and bread. Flour and meal seldom cost more than one-half cent per hundred-calorie portion, and baker's bread seldom costs more than 1 cent per hundred-calorie portion. One of the most satisfactory ways of reducing the cost of the diet, therefore, is by increasing the amount of cereal foods to 18 or 19 pounds a week for the average, or census, family, or until they supply 37½ per cent of all the fuel. When this is done, a few precautions must be observed. Care must be taken in the preparation of the cereals so that they will be palatable, and wisdom must be used in the selection of other foods. At least some of the cereals should be of the kind made from the whole grain, and the extra allowance of cereal foods must never be at the expense of milk or green-leaf vegetables. In general, too, extra care must be taken to select savory or flavorful foods from other groups when for economy's sake a comparatively large part of the diet is made up of cereals.

In figuring the relative costs of foods it must be remembered that a small saving per hundred-calorie portion may amount to considerable in the course of a week. For example, the 800 hundred-calorie portions usually consumed by the average family per week will cost $16 if the average price paid is 2 cents per hundred-calorie portion. If the average price can be reduced to 1½ cents per hundred-calorie portion, the cost of the week's food supply will be $12 instead of $16, a saving of $4.

SUGGESTIONS FOR A HOUSEHOLD FOOD ACCOUNT BOOK.

If the household food account book is so arranged that the items of the different groups are kept separate, it is easy to see whether the food supply is well proportioned and also to estimate the amounts of food used. Under each group there should be several subheads. For example, under vegetables and fruits, there should be at least two, one for fresh and canned, the other for dried. This will serve as a

reminder that the original or fresh weight of the dried fruits was six times their dried weight, and that therefore 1 pound dried represents 6 pounds fresh weight. Most housekeepers will wish also to record separately fresh, canned, and dried vegetables, and fresh, canned, and dried fruits. In addition to this, it is well to list the green-leaf vegetables separately as a reminder of their importance in the diet. The section of the account book devoted to vegetables and fruits would then be arranged somewhat as shown below, and this would be typical of other groups as well.

HOUSEHOLD FOOD ACCOUNT BOOK.

GROUP I.—*Vegetables and fruits.*

FRESH GREEN-LEAF VEGETABLES.

Date.	Kind.	Amount.	Weight.	Cost.
Total				

OTHER FRESH VEGETABLES.

Total				

CANNED VEGETABLES.

Total				

DRIED VEGETABLES.

Total				

FRESH FRUITS.

Date.	Kind.	Amount.	Weight.	Cost.
Total				

CANNED FRUITS.

Total				

DRIED FRUITS.

Total				

Under Group II there should be at least two subheads, namely, (1) milk, and (2) flesh foods, eggs, and cheese. For convenience, however, the number of such foods may be increased to make separate records for milk; buttermilk and skim milk; eggs; fresh fish, dried fish, canned fish, meat, poultry, cheese, and peanuts.

Under Group III there should be at least two heads, namely, (1) dry cereals and (2) bread and rolls. This divides the foods that contain only three-fourths of cereal per pound from those that are all cereal. For convenience, a third subhead may be used, namely, (3) other bakery goods. These last-mentioned foods, which include cake, pie, doughnuts, and crackers, usually contain some fat and sugar, which raise their fuel value. They correspond more closely, therefore, in fuel value to the cereals themselves than to bread.

Under Group IV there should be three heads, namely, (1) sugar and candy, (2) honey, molasses, and sirups, each pound of which corresponds with about three-fourths of a pound of sugar, (3) jams, jellies, and preserves, each pound of which corresponds to about half a pound of sugar.

Under Group V there should be four heads, (1) fats, (2) bacon, salt pork, pork sausage, fat nut meats, chocolate, each pound of which corresponds to about three-fourths pound of fat, (3) butter and other table fats, each pound of which corresponds to about 13 ounces of fat, and (4) cream and nuts in the shell, each pound of which corresponds to about one-fourth of a pound of fat.

With this arrangement it is possible to estimate quickly the number of quarts of milk used and also the number of pounds of vegetables and fruits, fresh weight, of meats and similar foods, of cereals, of sweets, and of fat. With this arrangeemnt, too, the number of hundred-calorie portions used can easily be estimated with sufficient accuracy for most purposes. This can be done by allowing 2¼ hundred-calorie portions per pound for the fresh vegetables and fruits; 13½ per pound for the dried vegetables and fruits; 3 per pound or pint for the whole milk; 1½ per pound or pint for the buttermilk and skim milk; 8 per pound for the flesh foods, eggs, and cheese; 16 per pound for the dry cereals, and also for pies, cakes, and crackers; 12 per pound for bread; 18 per pound for sugar and candy; 13½ per pound for sirups; 9 per pound for jellies, jams, and marmalades; 40 per pound for fats; 34 per pound for butter; 28 per pound for bacon, salt pork, chocolate, and shelled nuts; and 10 per pound for cream and nuts in the shell.

Those who wish to compare the cost per hundred-calorie portion of different foods or to calculate the number of hundred-calorie portions provided by each separate food should add two more columns to the account. A sample section of the account book would then be arranged as follows:

GROUP II.—*Flesh foods, eggs, and cheese.*

Date.	Kind.	Amount.	Weight.	Cost.	Number of 100-calorie portions.	Cost per 100-calorie portion.
Total						

SUMMARY.

The problems of food selection considered in this bulletin come under four heads, namely, adequacy, wholesomeness, attractiveness, and cost. Of all the many food materials now available there is not one that can not be made to contribute in some way to the wholesomeness or to the attractiveness of the diet, but the number of different kinds of foods actually needed is small. All the food materials may in fact be classed under five heads or groups. Some of the members of each of the groups are shown in Figures 1 to 5 in such quantities that, taken together, they make a weekly food supply for the average, or census, family, consisting of a father, a mother, and three young children. Most of the common food materials that are not shown in the illustrations are included in the lists on pages 17 and 18, or mentioned in other parts of the bulletin. Since no two materials, even those that are grouped together, serve exactly the same purposes in the diet, attention is called to certain exceptionally important foods

under each group that must not be omitted for any long period of time.

This grouping brings together under one head those foods which serve some, at least, of the same purposes in the diet, and which can therefore be reasonably compared in price. The amount of nourishment or of material other than water and inedible substances in a pound of each of the different foods is stated in two ways, by weight and by hundred-calorie portions. By means of either of these two methods of measuring food values the amount of nourishment obtained for a given sum of money in buying different foods at different market prices can be estimated and compared.

Suggestions are made for adapting the allowance of foods to the needs of families that require more or less food than the average family, and also for changing the proportions of the diet in the interest of economy.

NOTE.—Reproductions, in black and white, 18 by 23 inches, of the eight Food Selection and Meal Planning Charts referred to in this bulletin, may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 50 cents a set.

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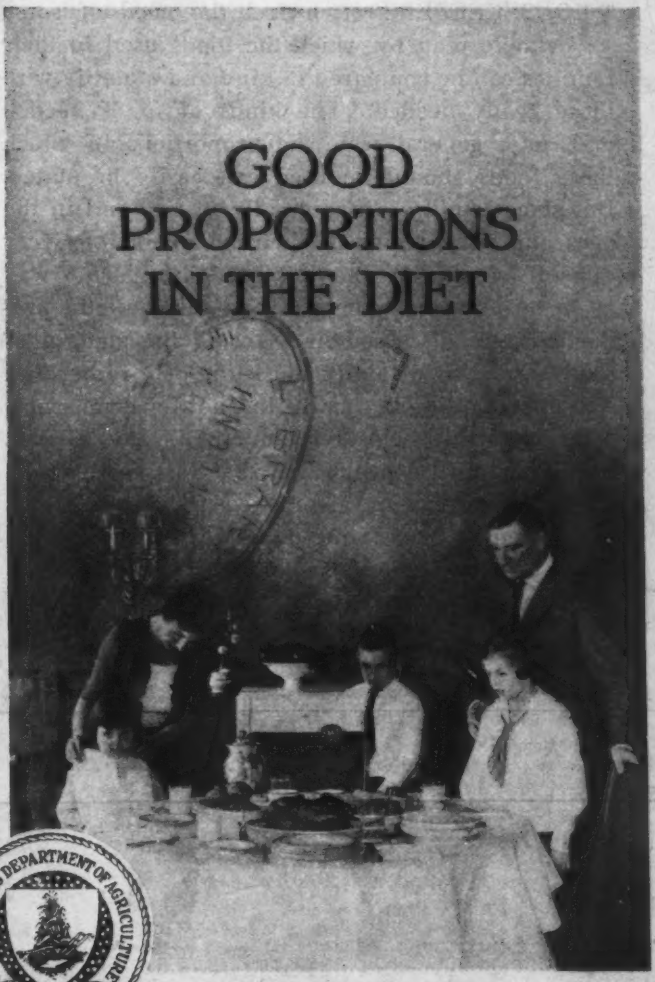
XUM

U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 1313

May 1923

GOOD PROPORTIONS IN THE DIET



XUM

HOUSEKEEPERS often feel the need of some simple plan by which the foods used in their families can be compared in kind and quantity with those really needed. The kinds of foods needed and, in a general way, the proportions in which these foods should be used can easily be stated. But since families differ greatly in size and in the ages and occupations of their members it is very difficult to state the amounts needed in such a way as to be universally helpful. In this bulletin proportions are discussed in terms of the amount of food needed by a family consisting of a father and a mother, both doing active but not hard muscular work, and three children under 12 years of age. Such a group of people is what has come to be known as the "average," or "census," family and is here taken as the starting point for considering the needs of other families, smaller as well as larger, and engaged in more active and less active work.

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GOOD PROPORTIONS IN THE DIET

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KINDS OF FOODS NEEDED

THE NUMBER of different food materials available in most parts of the United States is very great and is constantly increasing as a result of improved methods of agriculture, the invention of new manufacturing processes, the introduction of foreign food plants, and the cultivation of wild varieties. There is no one of all these many foods that can not be introduced into the diet in such a way as to contribute to its wholesomeness or its attractiveness, but the number of different kinds of food needed is very small. Many food materials, the various cereals, for example, are practically interchangeable in the diet. In fact, most of the common foods may be classified into five groups according to their composition and uses, namely, (1) vegetables and fruits, (2) meat, milk, and other foods depended on for complete or efficient protein, (3) cereals, (4) sugar and sugary foods, and (5) fats and fat foods.

A meal, a day's ration, or a weekly food supply made up from representatives of all these five groups is likely to provide all the substances required to make the diet wholesome and attractive, and for this reason the classification should serve as a guide in the selection of foods and the planning of meals. It should be of some help, too, in comparing the cost of different foods, for it separates foods that have little or nothing in common, and brings together under one head food materials that are enough alike to be compared in price. For example, to know that a pound of salt codfish costs 10 cents more than a pound of prunes does not make economical meal planning easier. It is helpful, however, to know that one kind of breakfast cereal costs 15 cents, while another that might be substituted for it costs 7 cents, or that a certain amount spent for an inexpensive kind of fruit will bring as good returns in food value as twice that amount spent for some out-of-season variety.

[1] Deceased.

Suggestive weekly food supplies of the five different groups of foods are shown in Figures 1 to 5. These pictures are taken from a set of eight charts prepared to show the principles of food selection. The information on the three remaining charts, which is chiefly descriptive and explanatory, is included in the discussions which follow, but it has been expanded by the addition of certain details which for lack of space were omitted from the charts.

The uses of the different kinds of foods are briefly outlined in what follows.

GROUP I. VEGETABLES AND FRUITS

Vegetables and fruits are depended on for flavor, bulk, mineral substances, particularly iron, and for vitamins, of which at least three kinds, called A, B, and C, are now considered necessary. Spinach stands out among the other foods of this group because of its exceptionally large percentage of iron. The green-leaf vegetables as a class, including lettuce, spinach, kale, dandelion greens, the green tops of turnips, or of beets, or of radishes, and many other vegetables commonly used for salads and greens are especially useful in supplying vitamin A, which is now believed to be necessary for normal growth and for the continued bodily well-being even of adults. Practically all the vegetables and fruits furnish vitamin B, which is, however, so widely distributed among natural food materials that it presents less of a problem to the housekeeper than either of the others. The two chief sources of it are the vegetables and fruits and the so-called whole-grain cereals. Many fruits have been found to supply vitamin C. Lemons, oranges, and tomatoes are considered especially rich in it, and some of the vegetables, notably cabbage and some varieties of turnips, contain comparatively large amounts. White potatoes are also considered an important source of this vitamin in the diet, not because they supply more, pound for pound, than many other foods, but because being mild in flavor and comparatively cheap they are used in larger amounts in most families than any other one vegetable.

It is now believed that the vitamins are to some extent destroyed by drying and also by cooking, particularly in the presence of soda. Probably no two foods are affected to the same extent, and even if the effect on every food were known, the facts would be difficult to keep in mind. In the absence of definite available knowledge on this subject it is wise for the housekeeper to use regularly some uncooked fruits or tomatoes, fresh or canned, and some green-leaf vegetables. The last mentioned should be used either raw or cooked only enough to make them taste good and without unnecessary loss of their juices. Canned and dried vegetables and fruits may all be used for the sake of economy or convenience or to give bulk to the diet, but never to the exclusion of green-leaf vegetables and fresh fruits. There is no way at present of measuring the exact amount of fruit juices needed for health. It seems probable, however, that it is not large, and the housekeeper who can not afford to serve whole oranges, grapefruit, or fresh tomatoes is probably on the safe side, if she makes a practice of introducing small amounts of orange or lemon juice or canned tomatoes into her bills of fare. An orange cut up with other fruits or a little lemon juice added to sliced bananas,

stewed prunes, or other fresh or dried fruits is helpful. There are many desserts and beverages, too, in which small amounts of orange or lemon juice can be used, and many gravies, sauces, and soups that are improved by a little tomato juice. Regularity of supply is probably more important than the use of large amounts.

GROUP II. FOODS DEPENDED ON FOR EFFICIENT PROTEIN

Representative of the foods that furnish efficient protein are flesh foods, including lean and medium fat meats, poultry, game, fish, and sea foods; eggs; milk; cheese of various kinds; peanuts and soy beans. These foods, though differing much in other respects, are alike in furnishing a kind of protein that will serve to build the protein found in the tissues of the body. Such foods as bacon, salt pork, fat pork sausage, and cream furnish the same kind of protein as the foods of this group, but are too fat to be used as the means of supplying any considerable portion of the needed amount. As a rule, if a food contains two and a half times as much fat as protein, it is listed among the foods of Group V, which are depended on to give richness to the diet rather than to furnish protein.

Some of these foods have special uses. Milk and cheese are very rich in lime, and meat and eggs in iron. Milk from properly fed cows and egg yolks are important sources of vitamin A. In spite of their differences, these foods may be considered interchangeable in the diet of the adult, but in the diet of children none of the ordinary foods can take the place of milk.

GROUP III. CEREAL GRAINS AND THEIR PRODUCTS

The cereal-grain foods are flour, meal, breakfast foods, bread, rolls, crackers, and all other foods that are made wholly or chiefly from the cereal grains such as wheat, corn, rye, rice, barley, and oats. These cereal foods are depended on to supply protein, starch, and, particularly if they are made from the whole grain, mineral substances and vitamins. Vitamin B is found so near the germ that it is likely to be lost if the germ is removed. The mineral substances are found chiefly in the germ and in the outer coatings of the grain. It is generally agreed that cereal foods keep better if the germ has been removed, and many people prefer white to whole-wheat flour because it makes lighter bread. However, if white bread only is served, care should be taken either to introduce whole-grain cereals into the diet as breakfast foods or in some other way, or to provide an unusually large proportion of vegetables and fruits.

GROUP IV. SUGAR AND SUGAR FOODS

The sugar foods are sugars of different kinds, including granulated, pulverized, lump, brown, and maple; molasses; honey; sirups; candy; sweet chocolate; rich preserves; jellies; jams and marmalades. These foods can be depended on for fuel and flavor, but not for protein, vitamins, and mineral substances. They are therefore not so essential as the other groups. It should be said, however, that sugar at ordinary prices is an economical body fuel and a very economical flavoring material as compared with most extracts and even

with spices. If sweets are used in proper proportions to other food materials and are not served in such a way as to destroy the appetite for other foods, they play an important part in the diet.

GROUP V. FATS AND FAT FOODS

Fats and fat foods include butter, oil, lard, suet, and other table and cooking fats; cream; bacon; salt pork; pork sausage; chocolate; and rich or oily nuts. Most of these foods are prepared by separating fat from natural food materials such as meat, milk, olives, corn, and cottonseed. The advantage of using them in this separated form is that in this way the richness and flavor that they give to the diet are more easily distributed through the other foods. Some of the fat foods, especially butter and cream, furnish vitamin A, and for this reason have great advantage over the other foods of the group, particularly when milk, eggs, and green-leaf vegetables can not be obtained in sufficient amounts.

PROPORTIONS OF FOODS NEEDED

All of the foods mentioned in the preceding paragraphs, and in fact all foods, furnish body fuel or material that can be burned in the body to give it energy and incidentally to keep up its temperature. The fuel supplied by Group I, the vegetables and fruits, is chiefly sugar and starch; that supplied by Group II, namely, milk, meat, eggs, and cheese, chiefly complete, or efficient, protein and fat; that supplied by Group III, the cereals, chiefly protein and starch, the latter being usually six or seven times as much by weight as the former; that supplied by Group IV, the sweets, almost exclusively sugar; and that supplied by Group V, almost exclusively fat. As a rule, the diet will be sufficiently bulky and flavorful and will furnish the right proportions of starch, fat, and sugar for the taste of most people if the vegetables and fruits furnish about 20 per cent of the fuel; the meat, eggs, milk, and similar foods, 25 per cent; the cereal foods, 25 per cent; sweets, 10 per cent; and fats and fat foods, 20 per cent. It will also furnish satisfactory kinds and amounts of protein, mineral substances, and vitamins. These proportions have, therefore, been adopted in making up the sample food supply shown on pages 6 to 13.

The choice of the particular foods from each group to be here illustrated was determined by the facts stated in the paragraphs on the special values of the foods of different groups (pp. 2–4). Many other combinations, more meat and fewer eggs, for example, or more butter and less bacon, or more oatmeal and less flour, would be equally good.

The proportions given are especially adapted for persons who do about an average amount of muscular work. Those who do light muscular work or lead sedentary lives would naturally eat a larger proportion of vegetables, fruits, and efficient-protein foods, and a smaller proportion of cereals, fats, and sweets. On the other hand, those who do hard muscular work seem to need a larger percentage of energy-yielding foods, such as cereals, fats, fat meats, and sweets.

AMOUNTS OF FOODS NEEDED

It is far easier to state the kinds of foods which together make a satisfactory diet than it is to state the amounts of food needed by an individual or a family. Individuals differ greatly, of course, in age, size, and occupation, and families also differ widely, one from another. It is out of the question, of course, to consider in detail the needs of all families separately and so it has become customary to use a type family for discussion. The family usually chosen for this purpose consists of a man and a woman, both doing moderately active muscular work, and three children, under 12 years of age. Boys and girls over 12 are believed to need as much food as adults. The children in this "average," or "census," family are thought of as having combined ages of not more than 24 years. Such a family serves as the unit in most discussions of food needs and costs of living. The foods shown (figs. 1 to 5) make a good weekly supply for this unit family.

Such a family needs about 80,000 calories of energy per week, or to use a term which seems more appropriate in speaking of food, 800 one-hundred calorie portions or servings. The food required by this family is about the same in amount, though not necessarily in kind, as that needed by two men and two women all doing light muscular work, or by two men and one woman doing hard muscular work, like that of a farmer and a farm housekeeper. A farm household in which there were two men and one woman all doing hard muscular work, a girl and a boy in their teens, and one younger child would need about twice as much food. Throughout this bulletin the term "adult" should be understood to include boys and girls over 12 years of age, and the term "work" to include also running, jumping, and other activities ordinarily called play.

When the food supply illustrated (figs. 1 to 5) is used as a guide in the selection of food for a family with children, the first list of efficient-protein foods (p. 9) should be used. When, on the other hand, it is used as a guide to the selection of foods for families of adults only, the second list of efficient-protein foods which contains less milk and more meat, may be used.

TWO WAYS OF STATING AMOUNTS NEEDED

The amounts of foods needed for a given person or family are usually stated in one of two ways, (1) in terms of such familiar units as pounds, bushels, and dozens; or (2) in terms of units by which energy or the power to do work is measured, that is, in calories and hundred-calorie portions. Rules for estimating the amount of food needed in terms of calories and hundred-calorie portions are easy to make but troublesome to follow, for foods are not at present bought or sold by calories or hundred-calorie portions, nor are these units used in recipes. On the other hand, exact rules expressed in terms of pounds, dozens, and other familiar units are very difficult to make. The chief reason for this is that food materials differ greatly, not only in the kinds of nutrients they contain, but also in the amount of water and of inedible material such as bone and shell. Even those foods that serve practically the same purpose in the diet are not interchangeable pound for pound. For example, a pound of sugar

provides 16 ounces of sugar; a pound of honey, about 12 ounces of sugar; and other sweet foods in common use differ even more. It goes without saying that if a family uses candy, sirup, molasses, honey, and rich preserves purchased as such, it can not safely use so much sugar as it would otherwise; but it is quite impossible to state the total number of pounds of sweets that can be safely used without knowing which ones are to be selected and in what proportions they are to be used.

For these reasons, the amounts of the various kinds of foods that are necessary or desirable are stated in two ways in this bulletin, by weight and by hundred-calorie portions. This is done in the belief that estimates in pounds, dozens, and quarts may be more useful to some housekeepers and that estimates in hundred-calorie portions may, because of their greater definiteness, be more useful to others.

In most cases, the suggested allowances of food from the different groups are given, first in terms of some familiar member of the group; after that suggestions are made for the substitution of other foods that serve about the same purpose. For illustration, allowances of cereal foods are given, first in terms of pounds of dry cereal foods, which, of course, include the flour used in making bread. Many people, however, buy bread instead of having it prepared at home, and an allowance must be made for the nutrients which such bread contains. For this reason the statement is made that a pound of bread usually contains the equivalent of about three-fourths pound of flour and therefore counts as about three-fourths pound of dry cereal in making up the total allowance.

A WEEK'S SUPPLY OF VEGETABLES AND FRUITS FOR THE AVERAGE, OR CENSUS, FAMILY

The sample weekly supply of vegetables and fruits (fig. 1) for an average, or census, family represents about 70 pounds fresh weight, or about 160 hundred-calorie portions. It is believed that this amount if regularly used, will insure the required bulk and mineral substances, even though some of the vegetables and fruits are canned and some dried; and that it will also furnish the required vitamins, provided green-leaf vegetables and fresh fruits are regularly included in small amounts. The separate items in the sample supply are as follows:

	Pounds
Fresh vegetables and fruits:	
Potatoes, white, ½ peck	7
Potatoes, sweet, ½ peck	7
Asparagus	2
Beets, with greens	2
Carrots	2
Cabbage	2
Squash	2
Turnips	2
Celery	1
Lettuce	1
Onions	2
Tomatoes, 4 medium-sized	1
Rhubarb	1
Bananas, 1 dozen medium-sized	3
Oranges, ½ dozen medium-sized	3
Apples, 8 medium-sized	3
Pineapple (1)	2
Strawberries, 1 quart	1
Total	44
Canned vegetables and fruits:	
Peas, 1 quart	2
String beans, 1 quart	2
Cherries, 1 quart	2
Peaches, 1 quart	2
Total	8
Dried vegetables and fruits:	
Lima beans	2
Raisins	1
Total	3

HOW TO ESTIMATE THE NUMBER OF POUNDS FRESH WEIGHT

When all the vegetables and fruits used are fresh it is easy to estimate the weight, but when some are dried and some are canned it may be difficult. Vegetables and fruits lose on the average about five-sixths of their weight when they are dried, the loss being partly due to the removal of inedible portions, but chiefly to the passing off of water. A given number of pounds, dried, therefore, is likely to furnish as much fuel and mineral substances as six times that number of pounds fresh. A given number of pounds of canned vegetables and fruits, on the other hand, seldom corresponds in fuel and mineral substances to more than the same number of pounds fresh or as purchased, i. e., before skins, seeds, pods, outer leaves, and other inedible portions have been removed.

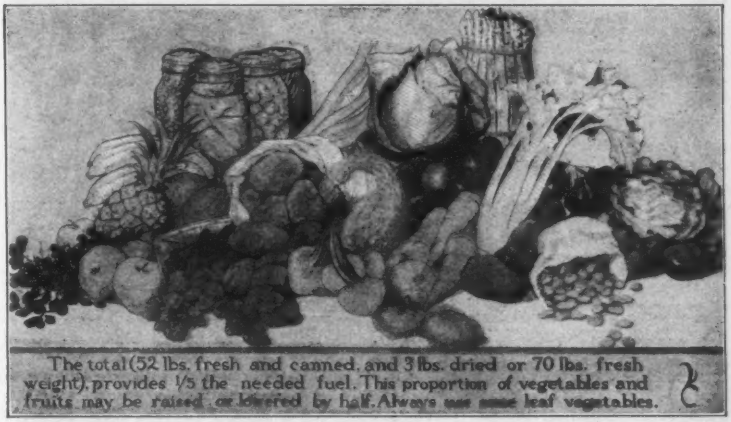
The total (52 lbs. fresh and canned, and 3 lbs. dried or 70 lbs. fresh weight), provides 1/5 the needed fuel. This proportion of vegetables and fruits may be raised or lowered by half. Always use some leaf vegetables.

FIG. 1.—Chart showing vegetables and fruits, fresh, canned, and dried, which together supply about 160 hundred-calorie portions. Any other combination of ordinary vegetables and fruits equivalent to 70 pounds of fresh material would supply about the same amount of body fuel

In making up the sample supply of vegetables and fruits, it was estimated that the 8 pounds of canned peas, string beans, cherries, and peaches correspond roughly with 8 pounds of these same foods fresh, and that the 3 pounds of dried lima beans and raisins correspond roughly with 18 pounds of fresh lima beans and grapes. The 44 pounds of fresh vegetables and fruits, the 8 pounds canned, and the 3 pounds dried, together represent, roughly, 70 pounds fresh weight.

This method of estimating the original or fresh weight of the vegetables and fruits used in the course of a week is recommended to the housekeeper who wishes to keep her food supply up to the standard. Dried and canned vegetables and fruits can never wholly take the place of fresh vegetables and fruits; but if only a small part of the 70 pounds can be obtained in fresh form, it is better to make up the remainder in the form of dried and canned products than to reduce the total.

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HOW TO ESTIMATE THE ENERGY VALUE OF THE VEGETABLES AND FRUITS

The fuel or energy values per pound of the different vegetables and fruits differ considerably, but from dietary studies it has been found that the fresh and canned vegetables and fruits in the variety in which they are used in most families seldom represent less than 225 calories, or 2¼ hundred-calorie portions per pound, and that the dry vegetables and fruits seldom represent less than 1,350 calories, or 13½ hundred-calorie portions per pound.

According to these figures the fresh and canned vegetables and fruits in the sample weekly supply should furnish at least 117 hundred-calorie portions and the dried at least 40½ hundred-calorie

The total (meat etc. 14 lbs. milk 14 qts.) provides about ¼ the needed fuel: for adults, this proportion may be raised or lowered by half but for a family with 3 children the milk shown is a minimum allowance.

FIG. 2.—Chart showing efficient-protein foods which together supply 200 hundred-calorie portions. Any other combination, consisting of 14 quarts of milk and 14 pounds of flesh foods, cheese, and eggs, would furnish about the same amount of body fuel

portions, making a total of 157½ hundred-calorie portions for the group, or about 20 per cent of the total 800 hundred-calorie portions needed. In this way the amount of fuel furnished by the vegetables and fruits in any food supply and the proportion of this fuel to the total fuel needed can be quickly estimated.

A WEEK'S SUPPLY OF EFFICIENT-PROTEIN FOODS FOR THE AVERAGE, OR CENSUS, FAMILY

A sample weekly food supply of meat, eggs, milk, and other foods depended on for efficient protein, such as would be needed by the typical family, is shown in Figure 2. The supply includes 14 quarts of milk and 14 pounds of flesh foods, cheese, eggs, and peanuts, or about 200 hundred-calorie portions. It is believed that if this amount of food of this group is used, the proportion of efficient

protein in the diet will be about right. The separate items are as follows:

	Quarts
Milk	14
	Pounds
Beef, fresh	4
Beef, dried	1
Fowl	3
Fish, fresh, lean	2
Fish, canned	1
Cheese	1
Eggs, 1 dozen	1½
Peanuts, 1 quart	½
Total	14

Children need more milk than adults and the number of quarts that should be used depends on the family. The 14 quarts shown in Figure 2 are believed to be as little as is wise for a family of two adults and three children. For this family 3 quarts a day, or 21 quarts a week, would be a better allowance, and would furnish daily three glasses for each child and a small quantity for general use. Since the added quart of milk would be chiefly for children, it would hardly be practicable to reduce the other foods much. A family of adults would probably use less milk in proportion to meat, cheese, and eggs. For three adults doing hard work or four doing light work (see p. 5) 1 quart of milk and 2½ to 3 pounds of the other foods would be a more usual daily allowance. For either of these two families the following may be used as a guide to the amount of efficient-protein foods used weekly:

	Quarts
Milk	7
	Pounds
Meats	10
Fowl	3
Fish, fresh, lean	2
Meat or fish, dried	1
Meat or fish, canned	1
Cheese	¾
Eggs, 1 dozen	1½
Peanuts, 1 quart	½

HOW TO ESTIMATE THE NUMBER OF HUNDRED-CALORIE PORTIONS OF EFFICIENT PROTEIN FOODS

The number of hundred-calorie portions that can be counted upon from the foods of the efficient-protein group is not easy to state except in the case of milk. A quart of whole milk supplies about 6 hundred-calorie portions and a quart of skim milk or buttermilk about 3 hundred-calorie portions. The 14 quarts of whole milk shown in Figure 2 represent, therefore, about 84 hundred-calorie portions. It has been found (see p. 18) that the meat exclusive of very fat products like bacon and salt pork, eggs, and similar foods used in most families average at least 8 hundred-calorie portions per pound.

The foods shown in Figure 2, some of which are fat and some lean, were chosen to correspond with this average and to supply about 112 hundred-calorie portions. It is true that the flesh foods, eggs, and cheese, used in the course of a week in a given family may represent less fuel than this per pound. They certainly will if they consist chiefly of fresh fish, chicken, or eggs, all of which are below the average in energy value. On the other hand, they will represent more than 8 hundred-calorie portions per pound if they consist chiefly of pork, lamb, cheese, or peanut butter, all of which are above the average. During the course of a month or a year, however, it is safe to count on an average of at least 8 hundred-calorie portions per pound from foods of this kind.

A WEEK'S SUPPLY OF CEREAL FOODS FOR THE AVERAGE, OR CENSUS, FAMILY

A sample weekly supply of cereal foods for the average family is shown in Figure 3. This supply corresponds to about 12½ pounds of dry cereals, such as flour, meal, and ready-to-eat breakfast foods, and supplies about 200 hundred-calorie portions. It is believed that if this amount of cereal foods is used regularly in addition to the vegetables, fruits, milk, meat, and other foods illustrated, the diet will be sure to supply enough protein and the proportion of starch to sugar and fat will make it palatable. Many well-to-do families,

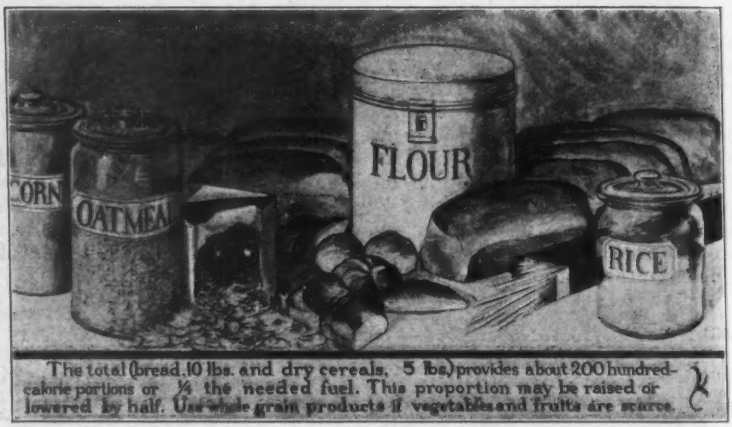
CORN
OATMEAL
F
FLOUR
RICE
The total (bread, 10 lbs. and dry cereals, 5 lbs.) provides about 200 hundred-calorie portions or ¼ the needed fuel. This proportion may be raised or lowered by half. Use whole grain products if vegetables and fruits are scarce.

FIG. 3.—Chart showing bread and other cereal foods which together supply about 200 hundred-calorie portions. Any other combination of cereal foods equivalent to 12½ pounds of dry cereal would furnish about the same amount of body fuel

however, prefer less cereal and more meat. The separate items are as follows:

	Pounds
Flour, 10 cups	2½
Rolled oats, 2½ to 3 cups	½
Corn meal, 1½ cups	½
Rice, 1 cup	½
Macaroni	½
Ready-to-eat breakfast cereal, to 6 cups	5 ½
Total	5
Bread and rolls	10

HOW TO ESTIMATE THE TOTAL AMOUNT OF CEREALS USED

Some families make their own bread, some buy bread, and some buy part and make part. Every pound of bread contains approximately three-fourths of a pound of flour. The housekeeper can, therefore, make a rough estimate of the amount of cereal food she uses by adding three-fourths of the weight of bread she buys to the weight of the flour, oatmeal, and other dry cereal food she used in cooking. For example, in the foods illustrated in Figure 3 there are 10 pounds of bread and rolls representing three-fourths as much flour, or about 7½ pounds. This added to the 5 pounds of dry cereals makes a total of 12½ pounds.

HOW TO ESTIMATE THE NUMBER OF HUNDRED-CALORIE PORTIONS IN CEREAL FOODS

It is a comparatively easy matter to estimate the number of hundred-calorie portions that are to be obtained from cereal foods. The dry cereals, including the various kinds of flours, meals, and breakfast foods average about 16 hundred-calorie portions per pound, and no one kind differs much one way or the other from the average. Bread and rolls average about 12 hundred-calorie portions per pound.

The dry cereals shown in Figure 3 may then be expected to furnish 5×16 hundred-calorie portions and the bread 10×12 hundred-calorie portions, making a total of 200 hundred-calorie portions. In this way the fuel value of any combination of cereal foods can be quickly ascertained.

MOLASSES
JELLY
GRANULATED SUGAR
The total (sugar and candy 3 lbs. honey sirup, molasses and jelly, each ½ lb.) equals 4 lbs. of sugar and provides about ⅒ the needed fuel. Sweets may be omitted or their proportion raised by half.

FIG. 4.—Chart showing sugar and other sweet foods which together supply about 80 hundred-calorie portions. Any other combination of such foods which furnishes about 4½ pounds of sugar would supply about the same amount of body fuel

A WEEK'S SUPPLY OF SWEETS FOR THE AVERAGE, OR CENSUS, FAMILY

A sample weekly supply of sweets for an average, or census, family is shown in Figure 4. These sweets represent about 4½ pounds of sugar, or about 80 hundred-calorie portions. It is believed that this amount of sweets if used regularly will contribute to the attractiveness of the diet without interfering with the use of the required amount of protein, mineral substances, and vitamins. The separate items are as follows:

	Pounds		Pounds
Sugar, granulated, 4 cups	2	Sirup, about ⅔ cup	⅓
Sugar, loaf	¼	Molasses, about ⅜ cup	⅓
Candy	¾	Jelly	½
Honey, about ⅜ cup	½		

HOW TO ESTIMATE THE AMOUNT OF SUGAR IN SWEETS

Granulated, lump, pulverized, and brown sugars, though differing in texture or flavor, are practically alike in composition; they contain little or nothing but sugar. A pound of candy may be considered the equivalent in fuel value of a pound of sugar. Water which has no fuel value, is used in making candy, to be sure, but so, too, are chocolate and nut meats, which have higher fuel values than sugar. The average fuel value per pound of candies of various kinds is, therefore, about the same as that of sugar. The proportion of sugar in thick sirups, such as honey and molasses, is about three-fourths of a pound to the pound, and in jellies, jams, and rich preserves, about one-half of a pound to the pound. This makes it possible to estimate quickly the total amount of sugar used, whether in the form of sugar itself or in the form of candy, sirups, or preserves. For example, in the sweets shown in Figure 4 there are 2¼ pounds of sugar itself and three-fourths of a pound of candy, together corresponding to a total of about 3 pounds of sugar. The honey, sirup, and molasses together weigh 1½ pounds, of which about three-fourths, or 18 ounces, is sugar. The jelly weighs one-half pound, and of this about half, or 4 ounces, is sugar. The 5 pounds of sweets listed therefore contains about 4½ pounds of sugar.

HOW TO ESTIMATE THE NUMBER OF HUNDRED-CALORIE PORTIONS IN THE SWEETS

Sugar itself provides 18 hundred-calorie portions per pound and average candy about the same number. Thick sirups provide about 13½ hundred-calorie portions, and jelly, jam, marmalade, and rich preserves about 9 hundred-calorie portions per pound. With these figures in mind, it is easy to estimate the number of hundred-calorie portions to be obtained from the sweets even when these foods are used in great variety. Of the sweets in Figure 4, for example, the 3 pounds of sugar and candy may be expected to furnish about 54 hundred-calorie portions, the 1½ pounds of thick sirups (honey, sirup, and molasses) about 20¼ hundred-calorie portions, and the one-half pound of jelly about 4½ hundred-calorie portions. This makes a total of nearly 80 hundred-calorie portions, or about one-tenth of the fuel needed weekly.

A WEEK'S SUPPLY OF FATS AND FAT FOODS FOR THE AVERAGE, OR CENSUS, FAMILY

A sample weekly food supply of fats and fat foods for the typical family is shown in Figure 5. These foods correspond to about 4 pounds of pure fat and represent about 160 hundred-calorie portions. It is believed that this amount of fat, in addition to that supplied by the meat, milk, and similar foods suggested, will make the diet sufficiently rich to taste good. It is believed, also, that the amount of butter, cream, and suet shown will, if used in connection with the milk and green vegetables elsewhere recommended, be enough to keep up the supply of vitamin A. The separate items are as follows:

	Pounds
Oil, ½ cup	¼
Shortening fat, 1 cup	½
Suet	¼
Total	1

	Pounds
Butter	2
Bacon	1
Total	3

	Pounds
Cream, 1 pint	1
Nuts in shell	1
Total	2

HOW TO ESTIMATE THE AMOUNT OF FAT IN THE FATS AND FAT FOODS

Oil, suet, lard, and drippings may be considered to be all fat; butter, bacon, salt pork, chocolate, and fat nut meats may be considered to be at least three-fourths fat; and cream and nuts in the shell may be considered to be one-fourth fat. With these figures in mind it is possible to estimate the amount of fat in the fat foods, whether these foods are chiefly butter or chiefly cream, oils, nuts, or other foods commonly used to enrich the diet. For instance, the pound of oil, shortening fat, and suet, shown in Figure 5, may be considered all fat. The fat in butter and bacon may be considered to be about 2¼ pounds, or three-fourths of their total weight, while the fat in the cream and nuts in the shell may be considered to be 8 ounces, or one-fourth of their total weight. This makes a total of nearly 4 pounds of fat in all.

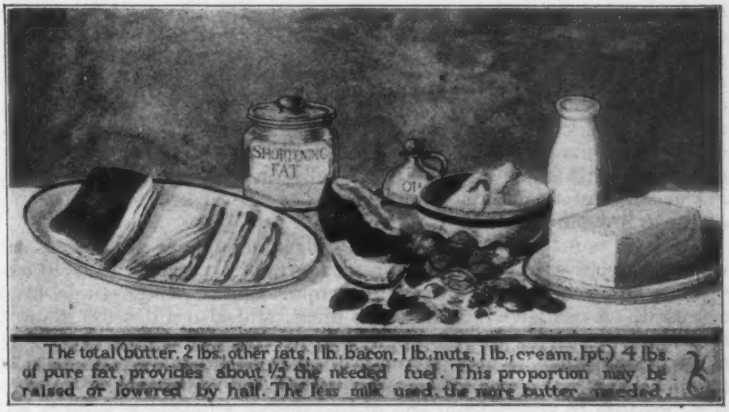
SHORTENING FAT
The total (butter, 2 lbs., other fats, 1 lb., bacon, 1 lb., nuts, 1 lb., cream, 1 pt.) 4 lbs. of pure fat, provides about ½ the needed fuel. This proportion may be raised or lowered by half. The less milk used, the more butter needed.

FIG. 5.—Chart showing fats and fat foods which together supply about 160 hundred-calorie portions. Any other combination of such foods equivalent to about 4 pounds of fat would furnish about the same amount of body fuel

HOW TO ESTIMATE THE NUMBER OF HUNDRED-CALORIE PROPORTIONS IN THE FAT AND FAT FOODS

Pure fat has a fuel value of about 4,000 calories per pound. Butter furnishes about 34 hundred-calorie portions per pound. Bacon, salt pork, chocolate, and fat nut meats average about 28 hundred-calorie portions, and cream and nuts in the shell about 10 hundred-calorie portions per pound. With these figures in mind it is possible to estimate quickly the number of hundred-calorie portions of fat and fat foods shown in the sample weekly supply as not far from 160 hundred-calorie portions, and the same method can be used in estimating the fuel value of any other list of fats and fat foods.

MEAL PLANNING

Up to this point, emphasis has been laid on the kinds and proportions of foods in the weekly supply, and no mention has been made of the make-up of the separate meals. This was done in the belief that a balanced food supply insures a balanced diet. The common

way of using such foods as those illustrated is by serving one or more foods from each of the five groups at each meal. Many people eat for breakfast: Fruit (Group I); either a cereal with milk, or an egg, or warmed-over meat or fish on toast or with bread (Groups II and III); butter or bacon (Group V): and sugar, marmalade, or both (Group IV). The usual bill of fare for lunch or supper includes meat, sliced cold or warmed over, or cheese, or eggs in some form, or a milk soup or chowder (Group II); bread or crackers (Group III); butter or oil (Group V); a green salad or sliced fruit (Group I); and sugar or a sweet of some other kind (Group IV). Dinner usually consists of meat, poultry, fish, or one of the so-called meat substitutes (Group II); potatoes and one other vegetable (Group I); bread and butter (Group III and V); and a sweet of some kind for dessert (Group IV); or bread without butter (Group III) and a rich dessert (Groups IV and V).

Some housekeepers like to do a certain amount of "balancing" as they go along and to serve at least one food from each group at every meal, but this is not necessary. There is no objection in the case of an adult to a breakfast of toast, butter, and coffee, tea, or cocoa (chiefly Groups III and V), if enough vegetables, fruits, and efficient-protein foods are supplied at later meals. Nor is there any reason to think that serious injury would be done by the omission of any one group of food for a whole day, or even longer. For this reason, emphasis has been placed chiefly on the importance of keeping account of the foods served in the course of a week rather than of those in each meal.

Another point to be remembered is that meals are not necessarily well balanced, even if they contain representatives of all the food groups, for much depends on the proportions in which these foods are used. A dinner which includes meat, and also a dessert made of milk and eggs, such as custard or ice cream, is likely to supply far more of the efficient-protein foods than needed, an important matter since these are among the most expensive food materials. Nor is it possible to judge from the dishes served whether a meal is balanced or not. For example, a meal that includes no meat course, but has in its place only bread and butter with vegetables or fruits may be well-balanced if the dessert is such a dish as old-fashioned rice pudding which has milk for its chief ingredient. If the weekly food supply is satisfactory the exact make-up of the separate meals is not important, though the habit of providing all the required kinds of foods regularly is helpful and likely to save time and thought.

SUGGESTED BILLS OF FARE

A bill of fare for a week that could be made from the food supply illustrated in Figures 1 to 5, is given below. It should be remembered that this food supply was planned for the average, or census, family and that it should perhaps be modified by increasing or decreasing the amount of milk according to the number of children and adults in the family. When more milk is provided for the young children this would partially take the place of the meat, fish, cheese, or egg dishes. It should be kept in mind also that the food materials in the suggested bill of fare are merely representative of the many kinds belonging to each group of foods. Thus, for example, pork, lamb, mutton, and veal might be substituted for chicken, fish, and beef, and

many other fruits and vegetable might replace those enumerated with no loss of nutritive value and with the advantage of adding variety to the diet.

SUNDAY

BREAKFAST	DINNER	LUNCH OR SUPPER
Breakfast cereal with raisins and milk; eggs; bread or toast with butter.	Chicken,[1] stuffed and roasted or fricasseed and served on toast; sweet potatoes; asparagus; jelly; bread; ice cream.	Peanut sandwiches with lettuce salad; or bread, milk, and butter for children; candy.

MONDAY

BREAKFAST	DINNER	LUNCH OR SUPPER
Baked apples; breakfast cereal with milk; bacon; bread or toast with butter.	Scalloped canned fish; potatoes; sliced tomatoes; squash; bread and butter; strawberry shortcake.	Creamed dried beef with baked potatoes; bread and butter; sliced oranges with coconut.

TUESDAY

BREAKFAST	DINNER	LUNCH OR SUPPER
Sliced pineapple and bananas; breakfast cereal with milk; bacon; bread or toast with butter.	Curried lima beans with warmed-over chicken or macaroni and cheese[1]; coleslaw; bread; apple pudding, baked or steamed.	Creamed fish on toast; bread and butter; raisin tarts.

WEDNESDAY

BREAKFAST	DINNER	LUNCH OR SUPPER
Canned cherries; breakfast cereal with milk; eggs; bread or toast with butter.	Roast beef; boiled onions; potatoes; bread; peach pie.	Lima-bean chowder; crackers or bread and butter; celery; boiled rice with honey.

THURSDAY

BREAKFAST	DINNER	LUNCH OR SUPPER
Bananas; breakfast cereal with milk; eggs; bread or toast with butter.	Meat cakes[1]; creamed potatoes; string beans; bread; suet pudding with raisins.	Cheese sandwiches or scalloped cheese and rice[1]; lettuce; bread and butter; wheat cakes with sirup.

FRIDAY

BREAKFAST	DINNER	LUNCH OR SUPPER
Stewed rhubarb; breakfast cereal with milk; corn griddle cakes with butter.	Fish, stuffed and baked[1]; sweet potatoes; beets with greens; bread; baked bananas.	Cream of pea soup; scalloped sweet potatoes; celery; bread or biscuits and butter; canned cherries.

SATURDAY

BREAKFAST	DINNER	LUNCH OR SUPPER
Canned peaches; breakfast cereal with milk; chipped beef on toast; bread or toast with butter.	Beef stew[1] or soup with turnips, carrots, onions, and dumplings; bread; orange custard with nut cookies.	Boiled potatoes and milk gravy made with bacon fat; coleslaw; bread and butter; candy.

COMPARING ONE'S OWN FAMILY WITH THE AVERAGE, OR CENSUS, FAMILY

The statement is made (p. 5) that the average, or census, family needs about 800 hundred-calorie portions a week, or about 114 a day. The number of hundred-calorie portions needed by any family can be estimated roughly by reference to Table 1, and from such an estimate the allowances for any given family or household may be compared with the allowances given in this bulletin. For illustra-

[1] Bread and milk instead of this for young children.

tion, in the case of the farm household suggested on page 5, each of the two men at hard muscular work would require about 300 hundred-calorie portions a week, the woman at similar work about 235, the two children in their teens about 535, and the younger child perhaps 140, making 1,510 hundred-calorie portions for the whole family. All of the allowances suggested in this bulletin, therefore, would need to be nearly doubled. The medium cereal allowance (see p. 10) would then be about 24 pounds a week instead of 12½, the fat allowance 8 instead of 4 pounds, and so on through the groups.

TABLE 1.—*Approximate number of hundred-calorie portions to be allowed for different individuals*

Individual	Per day	Per week
The average person over 12 years of age	27	200
A man or boy using large amount of muscular energy in work or play	40	280
A man or boy using moderate amount of muscular energy in work or play	33	235
A man or boy using little or no muscular energy in work or play	27	200
A woman or girl using large amount of muscular energy in work or play	33	235
A woman or girl using moderate amount of muscular energy in work or play	27	200
A woman or girl using little or no muscular energy in work or play	22	150
A boy or girl between 10 and 12 years of age	20	140
A boy or girl between 6 and 9 years of age	17	120
A boy or girl between 1 and 5 years of age	14	100
An infant under 1 year of age	6	40

COMPUTING THE COST OF A WEEK'S FOOD SUPPLY

The amounts of foods given in this bulletin, namely, 70 pounds of vegetables and fruits, fresh weight, or 160 hundred-calorie portions of vegetables and fruits, fresh, canned, and dried; 14 quarts, or 84 hundred-calorie portions of milk; 14 pounds, or 112 hundred-calorie portions, of flesh foods, eggs, and cheese; 12½ pounds of cereal, dry weight, or 200 hundred-calorie portions of cereal foods; 4½ pounds of sugar, or 80 hundred-calorie portions of sweets; and 4 pounds of fat, or 160 hundred-calorie portions of fat foods may be depended on to supply enough fuel for the average, or census, family per week and to make an attractive diet. For economy's sake, however, it is often necessary to take into account the separate as well as the average values of the foods of the different groups. The fuel values in terms of approximate hundred-calorie portions of many of the common food materials as purchased are given in Table 2:

TABLE 2.—*Approximate number of hundred-calorie portions in common food materials as purchased*

GROUP I. VEGETABLES AND FRUITS

Materials	Number of hundred-calorie portions
Vegetables, fresh:	
Asparagus	1 per pound.
Beans, lima, shelled	5½ per pound.
Do	7 per quart.
Beans, string	13¼ per pound.
Do	13½ per quart.
Beets	1½ per pound.
Cabbage	1 per pound.
Do	3 per medium-sized head (3 pounds).
Carrots	1½ per pound.
Cauliflower	1½ per pound.
Do	2 per medium-sized head (1½ pounds).
Celery	¾ per pound.
Corn	1¾ per pound.
Do	11 per dozen medium-sized ears.
Cowpeas, shelled	6 per pound.
Cucumbers	¾ per pound.
Do	¼ per medium-sized cucumber.
Lettuce	¾ per pound.
Do	¼ per medium-sized head.
Mushrooms	2 per pound.
Okra	1½ per pound.
Onions	2 per pound.
Parsnips	2½ per pound.
Peas	2½ per pound.
Do	20 per peck.
Potatoes, Irish	3 per pound.
Do	45 per peck.
Potatoes, sweet	4½ per pound.
Do	63 per peck.
Pumpkin	½ per pound.
Radishes	1 per pound.
Rhubarb	¾ per pound.
Spinach	1 per pound.
Do	5 per peck.
Squash	1 per pound.
Tomatoes	1 per pound.
Turnips	1¼ per pound.
Turnip tops	2 per pound.
Vegetables, canned:	
Beans, string	1 per pound.
Do	1¼ per No. 2 can.
Beans, baked	6 per pound.
Do	7 per No. 2 can.
Corn	4½ per pound.
Do	6 per No. 2 can.
Tomatoes	1 per pound.
Do	1¼ per No. 2 can.
Peas	2½ per pound.
Vegetables, canned—Continued.	
Peas	3 per No. 2 can.
Vegetables, dried:	
Beans	15½ per pound.
Cowpeas	15½ per pound.
Peas	16 per pound.
Fruits, fresh:	
Apples	2 per pound.
Do	24 per peck.
Bananas	3 per pound.
Do	11 per dozen medium-sized.
Cherries	3½ per pound or per quart.
Cranberries	2 per pound or per quart.
Currants	2½ per pound or per quart.
Grapes	3½ per pound or per quart.
Huckleberries	3½ per pound or per quart.
Lemons	1½ per pound.
Do	4½ per dozen medium-sized.
Muskmelon	1 per pound or 1 per medium-sized.
Oranges	1¾ per pound or 10 per dozen medium-sized.
Peaches	1½ per pound, 6 per dozen.
Pears	2½ per pound.
Plums	3¾ per pound.
Raspberries	3 per pound or per quart.
Strawberries	1¾ per pound or per quart.
Watermelon	½ per pound.
Fruits, canned:	
Cherries	4 per pound.
Do	5 per No. 2 can.
Peaches	2 per pound.
Do	2½ per No. 2 can.
Pears	3½ per pound.
Do	4½ per No. 2 can.
Pineapples	7 per pound.
Do	4½ per No. 2 can.
Fruits, dried:	
Apples	13 per pound.
Dates	14 per pound.
Figs	14½ per pound.
Prunes	11½ per pound.
Raisins	14 per pound.
Fruits, miscellaneous:	
Olives, green or ripe	10 per pound or per pint.

TABLE 2.—*Approximate number of hundred-calorie portions in common food materials as purchased*—Continued

GROUP II. FOODS DEPENDED UPON FOR EFFICIENT PROTEIN

Materials	Number of hundred-calorie portions	Materials	Number of hundred-calorie portions
Dairy products:		Fish, fresh:	
Milk, whole	3 per pound or 6 per quart.	Bass	2 per pound.
Milk, skim	3 per quart.	Codfish	1½ per pound.
Buttermilk	3 per quart.	Halibut, steak	4½ per pound.
Milk, condensed, unsweetened	8 per pound.	Mackerel, Spanish	3½ per pound.
Milk, condensed, sweetened	15 per pound.	Perch	2 per pound.
Milk, dried, whole	23 per pound.	Salmon	6 per pound.
Milk, dried, skim	16 per pound.	Shad	3½ per pound.
Cheese, ordinary	19½ per pound.	Shad roe	6 per pound.
Cheese, cottage	5 per pound.	Smelts	2¾ per pound.
Eggs	9 per dozen.	Trout, brook	2¾ per pound.
Meats:		Fish, smoked or salted:	
Beef, average	10 per pound.	Cod, salt (boneless)	5 per pound.
Beef, chuck	7½ per pound.	Halibut, smoked	9 per pound.
Beef, corned	12½ per pound.	Herring, smoked	7½ per pound.
Beef liver	5½ per pound.	Mackerel, salt	10 per pound.
Beef ribs	11 per pound.	Fish, canned:	
Beef, round	7¼ per pound.	Salmon	6½ per pound.
Beef, sirloin	9½ per pound.	Sardines	9 per pound.
Beef tongue	5½ per pound.	Tuna fish	9½ per pound.
Lamb, average	10 per pound.	Shellfish, fresh:	
Lamb, leg	11 per pound.	Lobster	1½ per pound.
Lamb, loin	13 per pound.	Oysters	2 per pound.
Mutton, average	12 per pound.	Do	4 per quart.
Pork, whole side, average	22 per pound.	Scallops	3½ per pound.
Pork, except items in V, average	13 per pound.	Shellfish, canned:	
Veal, average	5½ per pound	Lobster	4 per pound.
Poultry:		Shrimps	5 per pound.
Chicken, broilers	3 per pound.	Legumes:	
Fowl	7¼ per pound.	Peanuts, unshelled	19 per pound.
		Peanuts, shelled	11 per quart.
		Do	25 per pound.
		Peanut butter	27½ per pound.
		Soy beans, dried	20 per pound.

GROUP III. CEREAL FOODS

Bread	12 per pound.	Macaroni	16 per pound.
Do	9 per loaf, 16 oz. dough, 12-14 oz. baked.	Oatmeal	18 per pound.
		Rice	16 per pound.
Cereals, flaked	15 per pound.	Rolls	12 per pound.
Corn meal	16 per pound.	Rolls, 2-ounce size	18 per dozen
Crackers	19 per pound.	Tapioca	16 per pound.
Flour, wheat	16 per pound.	Wheat, shredded	16½ per pound.
Flour, buckwheat	16 per pound.		

GROUP IV. SUGARS AND SUGARY FOODS

Candy, average	17 per pound.	Sirup, corn	54 per quart.
Honey	15 per pound.	Sirup, maple	49 per quart.
Do	55 per quart.	Sugar, granulated	18 per pound.
Molasses	13 per pound.	Sugar, maple	15 per pound.
Do	50 per quart.	Chocolate, milk	22½ per pound.
Sirup, corn	14½ per pound.	Chocolate, sweet	22 per pound.

GROUP V. FATS AND FAT FOODS

Fats, table and cooking:		Nuts—Continued.	
Butter	34 per pound.	Butternuts, unshelled	4 per pound.
Lard	41 per pound.	Butternuts, shelled	32 per pound.
Oil	41 per pound.	Coconut in shell, without milk	14 per pound.
Suet	34 per pound	Hickory nuts, unshelled	12 per pound.
Cream, 18 per cent	9 per pound or per pint.	Hickory nuts, shelled	33 per pound.
Cream, 40 per cent	17 per pound or per pint.	Pecans, unshelled	17 per pound.
Fat meats:		Pecans, shelled	33 per pound.
Bacon	26 per pound.	Walnuts, California, unshelled	8½ per pound.
Pork, salt	28½ per pound.	Walnuts, California, shelled	32 per pound.
Pork sausage	21 per pound.	Chocolate	28 per pound.
Nuts:			
Almonds, unshelled	16 per pound.		
Almonds, shelled	29 per pound.		
Brazil nuts, unshelled	16 per pound.		
Brazil nuts, shelled	32 per pound.		

From the figures in the table and from the market prices of foods, the cost of a hundred-calorie portion of any food can be determined, and the cost of the various foods that serve the same purposes in the diet can be compared. Take, for example, ordinary American cheese, which provides nearly 20 hundred-calorie portions per pound, and cottage cheese, which provides 5 hundred-calorie portions per pound. When the American cheese sells for 40 cents a pound it costs about 2 cents per hundred-calorie portion, and cottage cheese would have to sell for 10 cents a pound to be equally cheap as a source of energy. Bread, which furnishes 12 hundred-calorie portions per pound, costs about 1 cent per hundred-calorie portion when it sells for 12 cents a pound. To provide energy as cheaply, ready-to-eat breakfast cereals, which yield about 16 hundred-calorie portions per pound, would have to sell for 16 cents a pound, or for 5 cents for an ordinary 5-ounce package. It is often possible, too, to save money by changing the proportions of the foods from the average groups, and such changes are safe within certain limits. With the exception of the milk for children, the foods of any group may safely be increased or decreased by 50 per cent, and sweets may be omitted altogether, if desired.

Under most conditions of living the cheapest foods are the lower-priced cereal preparations, namely, flour, meal, and bread. Flour and meal seldom cost more than one-half cent per hundred-calorie portion, and baker's bread seldom costs more than 1 cent per hundred-calorie portion. One of the most satisfactory ways of reducing the cost of the diet, therefore, is by increasing the amount of cereal foods to 18 or 19 pounds a week for the average, or census, family, or until they supply 37½ per cent of all the fuel. When this is done a few precautions must be observed. Care must be taken in the preparation of the cereals so that they will be palatable, and wisdom must be used in the selection of other foods. At least some of the cereals should be of the kind made from the whole grain, and the extra allowance of cereal foods must never be at the expense of milk or green-leaf vegetables. In general, too, extra care must be taken to select savory or flavorful foods from other groups when for economy's sake a comparatively large part of the diet is made up of cereals.

In figuring the relative costs of foods it must be remembered that a small saving per hundred-calorie portion may amount to considerable in the course of a week. For example, the 800 hundred-calorie portions usually consumed by the average family per week will cost $16 if the average price paid is 2 cents per hundred-calorie portion. If the average price can be reduced to 1½ cents per hundred-calorie portion, the cost of the week's food supply will be $12 instead of $16, a saving of $4.

SUGGESTIONS FOR A HOUSEHOLD FOOD ACCOUNT BOOK

If the household food account book is so arranged that the items of the different groups are kept separate, it is easy to see whether the food supply is well proportioned and also to estimate the amounts of food used. Under each group there should be several subheads. For example, under vegetables and fruits there should be at least two, one for fresh and canned, the other for dried. This will serve as a reminder that the original or fresh weight of the dried fruits was six

times their dried weight, and that therefore 1 pound dried represents 6 pounds fresh weight. In addition to this, it is well to list the green-leaf vegetables separately as a reminder of their importance in the diet. The section of the account book devoted to vegetables would then be arranged somewhat as shown below, and this would be typical of other groups as well.

HOUSEHOLD FOOD ACCOUNT BOOK

GROUP I.—*Vegetables*

FRESH GREEN-LEAF VEGETABLES

Date	Kind	Amount	Weight	Cost
Total				

OTHER FRESH VEGETABLES

Total				

CANNED VEGETABLES

Total				

DRIED VEGETABLES

Total				

Under Group II there should be at least two subheads, namely, (1) milk, and (2) flesh foods, eggs, and cheese. For convenience, however, separate records may be kept for milk, buttermilk, and skim milk; eggs; fish of all kinds, meat, poultry, cheese, and peanuts.

Under Group III there should be at least two heads, namely, (1) dry cereals and (2) bread and rolls. This divides the foods that contain only three-fourths of cereal per pound from those that are all cereal. For convenience, a third subhead may be used, namely, (3) other bakery goods. These last-mentioned foods, which include cake, pie, doughnuts, and crackers, usually contain some fat and sugar, which raise their food value. They correspond more closely, therefore, in fuel value to the cereal themselves than to bread.

Under Group IV there should be three heads, namely, (1) sugar and candy, (2) honey, molasses, and sirups, each pound of which corresponds with about three-fourths of a pound of sugar, (3) jams, jellies, and preserves, each pound of which corresponds to about half a pound of sugar.

Under Group V there should be four heads, (1) fats, (2) bacon, salt pork, pork sausage, fat nut meats, chocolate, each pound of which corresponds to about three-fourths pound of fat, (3) butter and other table fats, each pound of which corresponds to about 13 ounces of fat, and (4) cream and nuts in the shell, each pound of which corresponds to about one-half of a pound of fat.

With this arrangement it is possible to estimate quickly the number of quarts of milk used and also the number of pounds of vegetables and fruits, fresh weight, of meats and similar foods, of cereals, of sweets, and of fat. With this arrangement, too, the number of hundred-calorie portions used can easily be estimated with sufficient accuracy for most purposes. This can be done by allowing 2¼ hundred-calorie portions per pound for the fresh vegetables and fruits; 13½ per pound for the dried vegetables and fruits; 3 per pound or pint for the whole milk; 1½ per pound or pint for the buttermilk and skim milk; 8 per pound for the flesh foods, eggs, and cheese; 16 per pound for the dry cereals, and also for pies, cakes, and crackers; 12 per pound for bread; 18 per pound for sugar and candy; 13½ per pound for sirups; 9 per pound for jellies, jams, and marmalades; 40 per pound for fats; 34 per pound for butter; 28 per pound for bacon, salt pork, chocolate, and shelled nuts; and 10 per pound for cream and nuts in the shell.

Those who wish to compare the cost per hundred-calorie portion of different foods or to calculate the number of hundred-calorie portions provided by each separate food should add two more columns to the account. A sample section of the account would then be arranged as follows:

GROUP II.—*Flesh foods, eggs, and cheese*

Date	Kind	Amount	Weight	Cost	Number of 100-calorie portions	Cost per 100-calorie portion
Total						

SUMMARY

The problems of food selection considered in this bulletin come under four heads, namely, adequacy, wholesomeness, attractiveness, and cost. Of all the many food materials now available there is not one that can not be made to contribute in some way to the wholesomeness or to the attractiveness of the diet, but the number of different kinds of foods actually needed is small. All the food materials may in fact be classed under five heads or groups. Some of the members of each of the groups are shown in Figures 1 to 5 in such quantities that, taken together, they make a weekly food supply for the average, or census, family, consisting of a father, a mother, and three young children. Most of the common food materials that are not shown in the illustrations are included in the lists on pages 17 and 18, or mentioned in other parts of the bulletin. Since no two materials, even those that are grouped together, serve exactly the same purposes in the diet, attention is called to certain exceptionally important foods under each group that must not be omitted for any long period of time.

This grouping brings together under one head those foods which serve some, at least, of the same purposes in the diet, and which can, therefore, be reasonably compared in price. The amount of nourishment or of material other than water and inedible substances in a pound of each of the different foods is stated in two ways, by weight and by hundred-calorie portions. By means of either of these two methods of measuring food values the amount of nourishment obtained for a given sum of money in buying different foods at different market prices can be estimated and compared.

Suggestions are made for adapting the allowance of foods to the needs of families that require more or less food than the average family, and also for changing the proportions of the diet in the interest of economy.

NOTE.—Reproductions, in black and white, 18 by 23 inches, of the eight Food Selection and Meal Planning Charts referred to in this bulletin, may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 50 cents a set.

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